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J. ADAMS ALLEN, M.D., LL.D., WALTER HAY, M.D.,

EDITORS.

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EDITED BY J. ADAMS ALLEN, M.D., LL.D.: AND WALTER HAY, M.D.

VOL. XXXII. — MAY, 1875. — No. 5.

Original Communications.

ARTICLE I.

VARIOUS USES OF CHLORIDE OF ZINC.

BY J. E. NICHOLS, M.D., OSAGE, IA.

This article is sooner prepared than it was intended, on account of receiving letters of inquiry from professional brethren. To reply fully to their questions, it is necessary to repeat some of the matter of former articles, for which it is hoped pardon will be granted.

For the removal of cancer or other tumors, covered by the integument, rub together *chloride of zinc* and *blood-root* in powder. Use enough of the powdered root to take up the moisture caused by the deliquescence of the zinc, so as to form a plastic, moist dough. It should be firm enough not to spread out beyond the limits desired in its application. Mould it into a sheet, from one line to one-fourth of an inch in thickness, the size and shape of the surface to which it is to be applied, first protecting the surrounding sound parts with adhesive plaster. The

paste or dough is kept in place by means of adhesive plaster. The eschar will vary in extent and depth, according to the depth of paste employed. It usually exhausts its strength in forty-eight hours. The eschar will also be somewhat greater in circumference than the surface covered with paste, for which some allowances are to be made. If the first eschar does not embrace the whole of the morbid growth, as is sometimes the case, apply fresh paste to the remnant, protecting the edges of the wound with lint. The agent takes immediate and more extensive effect if there is no intervening integument. In this second application it may be better to employ Dr. Marsden's arsenious mucilage as follows:—
℞. arsenious acid, 3 ij; mucilage gm. acacia 3 j. M. Ft. a stiff paste. Apply this to not more than one square inch of surface, press lint over it, and when dry, cut off the surplus lint with sharp scissors. This has a more especial election for the morbid structures, not materially affecting the healthy tissues. After removing either of the above pastes at the end of forty-eight hours, and until the eschar comes away, poultices are the best dressings, after which simple cerate, or, in small wounds, court plaster, is all that is required until perfect cicatrization occurs, which usually is very speedily. In my experience, I have never made a wound with chloride of zinc that has not healed quickly and kindly, even when an indolent ulcer was acted upon. It is its quality of arousing healthy inflammation in the parts surrounding the eschar that it produces, that first led me to employ it in other cases than tumors, or cancer, some of which I give below:

Mr. N. Aldrich, a strong laborer, about twenty-eight or thirty years of age, called upon me in March, 1872, with chronic arthritis of the left knee, arising from an injury sustained in 1864, while in the U. S. volunteer service. He had been under the treatment of several good surgeons, only one of whom benefited him any, which he did by the use of a very perfect extension of the knee;

but a cure seemed to be impossible. I ordered the reapplication of the extension, and exhausted all the usual palliative modes of treatment. He finally became so anxious to be relieved from his terrible pain, that he was willing to undergo any operation, and even importuned me for several weeks to amputate above the knee. *Erichsen*, in his work on Surgery, advises the use of the actual cautery in some cases of arthritis. He says, "the patient having been anæsthetized, a cauterizing iron heated to a black-red heat, should be rapidly drawn over the diseased articulation in a series of parallel lines, across which an equal number of cross bars are again drawn, so as to char but not destroy the skin," (p. 615 of his second edition). While considering the advisability of employing this, it occurred to me that the zinc paste would answer as well, and would save employing the anæsthetic, and avoid the censure that such an operation would be likely to bring upon a country practitioner if not successful. Drawing the paste out in strings about a line in diameter, I laid them upon the joint, parallel with the limb, and about an inch apart, over the entire swelling, except in the popliteal space. I kept them in place by means of lint and a bandage for about twenty-four hours. They created great swelling and inflammation of the skin and subcutaneous tissues, the pain of which, the patient claimed, was many times compensated for by the absence of the pain in the joint. In places, eschars were formed, and in others, the integument seemed to be only slightly scorched. These healed in a short time, and I employed it the second time in the spaces between the old cicatrices. He was wholly free from pain after the second use of the paste, and the integument and superficial tissues were so drawn down and bound about the articulation that he has had no arthritis to this day. I met him last week, when he informed me that he had not been kept from labor an hour since my treatment, by any pain or lameness of that limb.

July 15, 1874. Mr. H., aged about twenty-two, otherwise healthy, called on me to be treated for syphilis. He had one well defined, indurated chancre upon the glans penis, and two softer ones upon the prepuce. He had been treated with nitrate of silver and acid previously, and objected to their employment now, unless it was absolutely necessary. Protecting the parts about the chancres with lint, I made use of the zinc paste, leaving it upon them about thirty-four hours. The eschars came away in three days, and I was surprised at the rapidity with which the wounds healed. I made use of a building-up treatment, and never had a case do so well before.

Samuel Ryerson, aged sixty-nine years, of good general health, consulted me November 18, 1874, with regard to an ulcer that had been on his face over fifteen years. It involved the inner half of the lower lid of the left eye, nearly all the left side of the nose, and a part of the cheek, as large as a silver dollar. He had another one below the temple, near the outer angle of the left eye, as large as a half dollar, that was not of so long standing as the other. I diagnosed it a *rodent ulcer*, or *lupus*, or the *noli me tangere*. He had consulted many physicians, both in the East and here, all of whom advised him to let it alone, as to meddle with it might aggravate it. I began the treatment of it by covering the lower half of each ulcer with the zinc paste, using one part zinc to about five parts of the powdered blood-root, allowing it to remain about twelve hours. It caused a thin eschar to form and peel off in about six days, after which I dressed it morning and night, by washing with castile soap suds, and applying pulverized *peruvian bark*, to absorb the secretions from the surfaces of the ulcers.

December 10. The ulcers are healed in over one-third their extent; but as they began to assume an indolent appearance, I applied a still weaker mixture of zinc and blood-root over their entire surfaces, leaving it on only about six hours, as the first application caused more

swelling than was desirable. The treatment was continued about the same as before, and resulted in the perfect cure of the smaller ulcer, and the reduction of the larger one to a very small point of ulceration in the inner canthus of the eye.

January 4, 1875. Make a still milder application of paste to the small ulcer in the angle of the eye, allowing it to remain six hours. This produced a very little sloughing from the surface, and only a little inflammation. The remnant of the lower eyelid, which was at first in a bad state of ectropion, is being drawn into a much better shape by the cicatrization than I had supposed possible at the commencement of the treatment.

March 25. There is only a little redness about the greater canthus, and slight ectropium of the lower lid. The puncta lachrymalis, which has opened on the surface of the ulcer throughout its career is perforate, and even the pustules that formerly came upon the face about the ulcers have ceased to appear, and, on the whole, the results are better than I had thought possible. Good diet has constituted the whole of the general treatment.

Another case, learning of my treatment of this, came from a neighboring town for treatment. He has a *rodent ulcer*, embracing both sides and bridge of the nose, with a fistulous opening one-half inch long, by one-fourth inch wide, into the left nostril. This case possessed the characteristic indurated and tuberculated points in the integument about the ulcer, having a bright red and shining appearance. He has now been under treatment about a month, the zinc having been employed as in the other case; and now the ulcer is all healed, excepting a point the size of a little finger nail, and the fistula, which will require a plastic operation to close it.

The case of Nils Anderson, that was reported as under treatment in my last article, terminated by the entire removal of the remnant of morbid growth, and such perfect filling in by granulation that an operation to restore the lip will not be needed. This could not have been

secured by the extirpation of the cancer in the usual way, in my opinion.

I have also employed a solution of zinc in acidulated water for the treatment of gleet, and various chronic inflammations of mucous membranes, with good results. In fact, I find it such a valuable agent to stimulate and to create healthy inflammation, that I should be loath to part with it as a therapeutical agent; and I am of the opinion that a fair and careful trial of it will cause others to admire it also. In its use, it should be remembered that, like many good agents, it is powerful to do mischief if carelessly handled.

ARTICLE II.

KOUMISS AS A REMEDIAL AGENT — REPORT OF CASES.

By R. L. LEONARD, M.D., CHICAGO.

While I trust the profession will not think me too sanguine in estimating the favorable results of a new remedial agent, it has been my fortune to have an early experience in the use of koumiss (fermented mare's milk) and the effect of its use has been such that I deem it proper to call the attention of the profession to a few cases which have been materially benefited by its use.

The first case, P., a babe, born at full term, and apparently healthy, weighing eight pounds. The mother's breasts secreted little or no milk, and from its birth the child was obliged to subsist upon cow's milk. For a few days it seemed to thrive, but the fifth day it vomited a good deal; an occasional ten-grain powder of the subnitrate of bismuth was ordered. On the seventh day my little patient was no better, and I gave aqua calcis, adding it to the cow's milk. When I called on the eighth day it was reported to be vomiting two-thirds of all the milk

taken. I ordered the nurse to give it condensed milk instead of the new cow's milk, and no medicines, and when I called on the ninth day, found that there was little or no vomiting, but on the tenth day the vomiting had increased considerably, and there was a very loose condition of the bowels. Subnitrate of bismuth was ordered in ten-grain doses every four hours, and for a day or two the child was better, but on the fourteenth day when I called, was reported much worse. The bismuth, which had been discontinued, partially, in view of the marked improvement noticeable at my last visit, was now resumed, and the dose increased to fifteen grains, but in spite of treatment, on the fifteenth day the babe retained but little of either milk or medicine, was constantly worrying, and its extreme emaciation induced me to obtain its weight, which I found to be seven pounds. On the eighteenth day the mother reported that it had vomited everything (milk and medicine) for forty-eight hours, and it seemed about dying from actual starvation, and my opinion was that it could not live another twenty-four hours unless something nourishing was retained.

In this extremity it occurred to me to try koumiss. Acting upon this idea I obtained a quart bottle of medium koumiss, and returning, had the nursing bottle filled with two-thirds koumiss and one-third hot water, and gave to the starving babe; to my utter astonishment it took the koumiss with an evident relish, emptied the bottle, and equally astonishing to me was the fact that it was retained. I ordered the mother to give all the babe would take, if retained, and on calling the next day found that it had used the entire quart, and the bowels were moving at intervals of about six hours.

On the 3rd day after commencing the use of koumiss in this case, a slight diarrhoea manifested itself, which disappeared in twenty-four hours without treatment. The babe had all the koumiss it would take from the first, improvement continued to be rapid, and at time of writing the child has used twenty-four gallons of koumiss

or an average of about three pints per day, is fat and healthy as a child can be at the age of fourteen weeks, has gone with its mother to her home in Nebraska, and in a letter received to-day she tells me that it has now been fed upon cow's milk for a week and is doing well.

The second case, Mrs. B., a lady of American birth, aged 36 years, who had been debilitated by typhoid fever, in which the stomach was quite irritable, and although the disease had a week previous passed its acme, still but little nourishment could be given on account of this excessive irritability. Koumiss was ordered in its purity, and was acceptable to the stomach; the recovery of strength was rapid, and the koumiss was discontinued in two weeks.

The third case, Mrs. O., an American lady, aged 43, who had been afflicted with dyspepsia for many years, and for the past ten of which her diet had been confined almost exclusively to oatmeal and her drink to very weak tea, as these were the only things that would remain unvomited. She had, as such patients usually do, visited physicians of eminence, and was during the past year very feeble and confined to her bed full half the time, simply because she was too weak to sit up. I had used koumiss in these other cases of irritable stomach and extreme emaciation and thought it advisable to try it in her case, so ordered it taken gradually for a day or two, then all she could take, to the exclusion of other food and drink. In two weeks she was much improved, so much so that she was not only able to sit up, but to take a broom and sweep the house, an exercise she had been totally incapacitated for during the whole of the last seventeen years. After three weeks, she was able to go for her own koumiss, walking a distance of one and a half miles on that mission every few days, and at present, after two months' use of the remedy, has so far regained her digestive power that she requires but little koumiss and can eat beefsteak and partake of the usual diet of her family table.

The fourth case, J., is a babe, aged six weeks, at the time of my first visit, which was depending upon the bottle, the mother having no milk in the breasts.

When I called, the babe, a little puny thing, seemed as if it were gasping for its last breath; it was extremely emaciated, and for twenty four hours up to that time had been unable to nurse the bottle, and had received an occasional drachm of milk from a teaspoon; the bowels were moving every hour, and it had retained scarcely anything for a day or two. I had some doubt as to whether the babe would live until the messenger could procure koumiss, let alone being benefited by it. A spoonful was put into its mouth which was with difficulty swallowed, soon it was followed by another, and so on at short intervals for four hours, at the expiration of which time it took the koumiss from the bottle, and from the very moment of the administration of the first spoonful to the present time, a period of nearly two weeks, its improvement has been exceedingly rapid, and it is now quite strong and apparently healthy.

I might mention another case, in which Mrs. S., a lady aged about 25 years, debilitated by a miscarriage which was accompanied by excessive hæmorrhage and succeeded by a three months' illness which left her in an extremely anæmic condition, which refused to yield to quinine, iron, strychnia and other tonics, that upon the introduction of koumiss to the treatment of the case, improved rapidly, and in three weeks so far recovered as to be discharged cured.

It is my candid belief that in koumiss the profession has a valuable acquisition to the list of remedies, and while I have dwelt in detail, upon the report of these cases, selected from my experience during the last three months with about fifty gallons of medium koumiss, I am satisfied that my success is not that kind which is attainable only in the hands of the writer, but may be duplicated by my professional brethren who have cases of extreme debility or emaciation to deal with, particu-

larly where the stomach is in an irritable condition without active organic disease; and trusting that the report of these cases may be of service to the readers of the JOURNAL, I submit it to their consideration.

Progress in Medical Sciences.

ARTICLE I.

PROGRESS OF OBSTETRICS.

By E. WARREN SAWYER, M.D.,

LECTURER ON OBSTETRICS, RUSH MEDICAL COLLEGE, CHICAGO.

1. Gum Cutting. By C. E. BUCKINGHAM, M.D., Professor of Obstetrics, Harvard Medical School. (*Boston Medical and Surgical Journal*, January 21, 1875.)

2. Cephalhæmatoma.

3. Vicarious Menstruation.

4. Mammary Abscess in very young Children.

5. Suspended Animation in New Born Children. (*Boston Medical and Surgical Journal*, February 18, 1875.)

6. Medico-Legal Bearing of Puerperal Fever.

1. The writer is surprised to learn, on inquiry, that many of the younger practitioners never use the gum lancet. The "let-alone system of treatment" is sometimes the best, but not in all cases, for the relief which often follows the lancing of the gum "has been more marked than that afforded by any other operation."

Almost all disturbances of the nervous system may be induced by the process of dentition; and many of these disturbances are dissipated by the free lancing of the gum. The relief which follows the loss of a few drops

- of blood is especially noticed in those cases where the gums are hot and swollen and the mouth is dry.

If it is a molar which is being erupted, a crucial incision is better than a longitudinal one.

Two objections against gum cutting are often raised by "maiden ladies, who are often advisers of mothers younger than themselves": First, that the scar which will result from the incision will be a greater obstacle to the progress of the tooth than the uncut gum. In answer to this, the writer says he has never seen a case in which, if the lancet went well through the gum, down upon the tooth, there was any trouble afterward with that tooth. Even should the gum close, and the indications for cutting recur, there is no reason why the gum may not be cut again and again.

The second objection is the pretended fear of hæmorrhage. Though instances of grave hæmorrhage from gum cutting are often indirectly heard of, the writer has never yet seen an instance of hæmorrhage, or ever met with a person who had seen hæmorrhage from gum cutting, though the case may be assumed of a bleeder, so called, who might bleed to death from a cut gum, as he would also from a scratch upon the skin.

Finally, the writer believes that infant lives have been saved by timely interference; on the other hand, lives have been sacrificed by withholding this safe and simple operation.

2. At a late meeting of the Obstetrical Society of Boston, Dr. Fildes remarked that he had always been in the habit, as had his father before him, of treating the bloody tumors of the scalp with a lancet, and no harm had ever resulted from the method.

3. At the same meeting, Dr. Jackson stated that he had recently heard of a case in which the blood oozed from the cheek. Dr. Minot spoke of a woman who repeatedly menstruated from the nipples in large quantities.

4. In the number 44, 1874, of *Le Progres Medical*, M. H. Duret has referred to the late controversy upon this subject in the *British Medical Journal*. Dr. Duret cites an instance under his own observation, of an infant of about six weeks old, whose right breast became inflamed and suppurated; strangely enough, the right breast of the mother also suppurated at the same time. This coincidence leads the writer to ask what relation there was between the affection of the mother and child? Is it necessary to go back to a period anterior to the accouchement, when the blood of the mother circulated within the vessels of the fœtus?

Independently of the inflammation and suppuration of the breast, which is excited by the manipulations of the breast by some English nurses, in their attempts "to break the baby's nipple strings," a practice which Dr. Duret properly calls a *contrume sauvage*, the breasts of very young infants are sometimes the seat of an inflammation, and suppuration, which may extend to the axilla, or mount even to the side of the neck.

5. This was the subject of a recent lecture at the Harvard Medical School, by Prof. Buckingham. In the blue and flabby child, even if pulsations have ceased in the cord, you may hear the fœtal pulsations over the heart. Do not stop to tie the cord; let it bleed a little. Send for two pails of water, the one cold and the other a little too warm to bathe in; a child who has never attempted to breathe will often cry lustily after being plunged alternately into the cold and warm bath. But before the water has reached you, try to inflate the lungs, in this manner: first wipe the mucus from the child's mouth; take the child up in a towel so it will not slip from your grasp; hold it with the scapulæ in the left palm; extend the head fully, so as to close the œsophagus, and seize the occiput between the thumb and index finger of the left hand; apply your mouth closely to that of the child, and inflate the lungs with your breath. There is no

danger of your blowing too hard ; "indeed, unless you place a moderately dry cloth between the child's mouth and your own, you will find it difficult to inflate at all." The lungs should be inflated ten or fifteen times per minute, meanwhile alternating your efforts with the plunges into the baths. Do not relinquish your exertions till all evidences of life have disappeared.

When the child is resuscitated, place it unwashed in a blanket, without food, where it will be better, for the next twenty-four hours, than if annoyed with any further attentions.

6. The February number of the *Obstetrical Journal of Great Britain* contains an account of a midwife, a Mrs. Ingram, who had been unfortunate in meeting with a number of cases of puerperal fever, some of which had died. The coroner, after examining into the cause of death of one of her patients, notified her that she should not again practice midwifery until two medical men had certified that she might safely do so. In defiance of this warning, she afterward attended upon two women in labor, both of whom died from puerperal fever. The coroner's jury rendered a verdict of manslaughter. She was committed in default of bail, which was afterwards furnished in sureties of £200, and she was released till the next assizes at Warwick. The Journal continues: "There are several points of interest in this case. First, the question as to the contagiousness of puerperal fever, the reality of which some individuals might perhaps be found to dispute ; second, the legal right of a coroner to step in and warn an obstetrician not to attend women in labor ; and, thirdly, does not it again demonstrate the necessity of instructing midwives ? Mrs. Ingram's attainments are sufficiently manifested in her answer to the coroner, who asked her if she knew what child-bed fever was : 'I never met with it, and did not even know till Dr. Brown told me. I never had a woman done badly in my life before—never.' "

ARTICLE II.

PROGRESS OF GYNÆCOLOGY.

BY A. REEVES JACKSON, M.D.,

LECTURER ON DISEASES OF WOMEN, RUSH MEDICAL COLLEGE, CHICAGO.

1. Myo-Fibroid Tumors of the Uterus, and their Treatment by the Hypodermic Injection of Ergotine. Dr. H. HILDEBRANDT. (*American Journal of Obstetrics*, Feb., 1875.)

2. Death following the Use of Sponge Tents. Dr. DE F. WILLARD. (*Obstetrical Journal of Great Britain and Ireland*, Oct., 1874.)

3. Metro-peritonitis produced by the Use of the ordinary Female Syringe. Dr. THOMAS MORE MADDEN. (*Irish Hospital Gazette*, March 1, 1875; *American Journal Med. Sciences*, April, 1875.)

1. Dr. Hildebrandt has given us another installment of cases, showing the results of the treatment of uterine fibroids by the subcutaneous injection of ergotine; and his extended experience has not lessened his confidence in the efficacy of the remedy.

He first details six cases in which the symptoms of pain, hæmorrhage, etc., were removed, and the tumor diminished in size. Then follow eleven cases, in which but little was accomplished as regards the diminution of the tumor, but in which a material improvement of the symptoms took place; and, finally, two cases in which the treatment exercised no influence whatever, either on the tumor or the symptoms.

Dr. Hildebrandt regards as most favorable for this plan of treatment those cases in which the tumor is so soft and elastic that we have difficulty in distinguishing it by its mere consistence and shape from a dense elastic cyst. Such tumors are common in the uterus, are usually found in young women, and are attended by profuse hæmorrhages and hydrorrhœa. Tumors of this character are generally soft and spongy, and contain more muscular fibres, and are, texturally, similar to the uterus during the early stage of puerperal convalescence. Although he does not agree with the opinion lately expressed

by Prof. Spiegelberg to the effect that the complete absorption of an intramural fibroid is possible only when it is not, as usual, enclosed in a capsule, but merges directly without any boundary into the tissue, yet he admits that such are more liable to be rapidly and easily diminished and absorbed than those which are surrounded by a distinct capsule. That is to say, he does not regard the capsule which commonly surrounds a uterine fibroid as an absolute impediment to a cure, because that capsule neither prevents the uniform compression of the tumor, nor is even incapable of absorption itself.

Our author thinks that even with the comparatively small number of observations already made upon this method of treatment, we may accept the following points as conclusively established respecting the prognosis. The treatment is likely to be favorable in its results:

1. When the tumor is richly provided with muscular tissue and possesses the consistence and feel of a tense elastic cyst.

2. When the tumor is submucous.

3. When the walls of the womb are sound, capable of a vigorous contraction, not too much attenuated by dilatation or stiffened by exudation into their substance, and when there is no para- or peri-metritis present.

4. When the tumor is unprovided with a capsule and merges directly without a boundary into the peculiar tissue of the uterus, which anatomical relation of uterine fibroids may be considered most favorable to their complete cure by absorption.

The least promising cases are old anæmic fibroids, composed principally of connective tissue, such as occur in persons of advanced years; those in which chronic inflammation or its results are present, either in or about the uterus; those in which the uterine walls are attenuated, or the seat of inflammatory infiltration; and, those which are subperitoneal. In all the cases belonging to these classes, no appreciable effect was produced by the treatment upon the size of the growth.

The preparation used by Dr. Hildebrandt is an aqueous extract of ergot, prepared according to Dr. Wernich's formula in Berlin. This is mixed with distilled water and glycerine, as follows: *R.* Extract secal. cornut., 3 drams, in aq. destillat., 12 drams, and glycerini puri, 3 drams. Of this he ordinarily injects the contents of a full Pravaz's syringe, containing about 44 drops.*

He makes the injection into the abdominal walls over the site of the tumor, passing the point of the needle deeply into the tissues. In at least one thousand injections of ergotine made by him for various purposes, he has never seen an abscess follow, and only in three clinical cases did this occur. He attributes this immunity from abscess entirely to his mode of procedure, which consists in lifting the skin of the abdomen up in a tolerably high fold by the thumb and finger, and introducing the needle perpendicularly to two-thirds of its length into the apex of the fold, and injecting the fluid very deeply into the subcutaneous cellular tissue—perhaps even into the abdominal muscles. If the injection is made timidly and superficially, a very painful and diffused cutaneous abscess will usually arise.

2. At a meeting of the Obstetrical Society of Philadelphia, held December 3d, Dr. Willard exhibited the uterus of a woman who had died after dilatation of the cervix by sponge-tents. The patient was sterile and earnestly desired offspring, and as the cervix was very narrow a tent was introduced. This slightly dilated the canal, but as it closed up again, a larger one was tried. This produced neuralgic pains, and it was withdrawn and replaced with a smaller one. This was done on a Friday. On the following day the patient, contrary to orders, worked at the sewing machine. On Sunday the

* All the benefits of the hypodermic use of ergot may be obtained by using Squibb's new aqueous extract of ergot, which is soluble in water, free from all irritant matter, and six times the strength of pure ergot. It is carefully prepared for hypodermic use by J. P. Sharp and E. H. Sargent, druggists, of this city.

doctor found her with a tender abdomen, extreme pain, fever, etc. The tent had slipped out of the cervical canal and was found in the vagina. The patient died on the ninth day.

The *post-mortem* examination showed a small amount of serous exudation in the abdominal cavity, and an abscess in the left side of the uterus, containing about an ounce and a half of pus. The parietal layer of the peritoneum was covered with lymph. There had been extensive inflammation of the pelvic viscera; probably at first peri-uterine cellulitis, and then general peritonitis.

During the discussion which followed, four other fatal cases similar to the foregoing were related by Drs. Wilson, Hodge, Smith and Goodell. In all these cases, with a single exception, death took place after a second or third introduction of tents, and Drs. Smith and Goodell expressed the opinion that in this fact was to be found the explanation of the fatal result.

The use of tents for the purpose of dilating the cervix uteri, is unquestionably more dangerous than is usually supposed. While the degree of danger is doubtless increased by the presence of abnormal growths in the womb, and by lack of rest during the period of their use, death has occasionally occurred where the uterus was healthy, and where the patient had been kept perfectly quiet in bed. But tents are too valuable a means of diagnosis to be abandoned on account of the occasional accidents that attend their employment, and hence it is our duty to observe every precaution that may reduce these untoward results to a minimum.

One of these precautions is that alluded to above. We should endeavor to procure all the dilatation necessary by a single tent, or a single batch of tents. The first tent sets up an irritation and congestion of the cervix; its removal produces an abrasion of the mucous surface, and from this is absorbed the decomposing or septic material generated by the subsequent ones. A very excellent plan is that suggested by Dr. Goodell, at the meet-

ing referred to above. He advises the stretching open of the cervical canal by the uterine dilator, and the crowding in of the largest sponge tent possible, and then insinuating around it several small laminaria tents. In this way the required amount of dilatation may frequently be obtained by a single operation.

Tents should never be used so long as inflammation of the pelvic organs, or its results, are present. They should never be used unless in exceptional cases, immediately before or after or during a menstrual period; and, finally, antiseptic vaginal injections, consisting either of solutions of chlorate of potassa, or of carbolic acid, should be used at intervals of three or four hours during the presence of the tent. If these precautions be taken, uterine tents may be used with at least the smallest degree of danger, if not with entire safety.

3. At a recent meeting of the Dublin Obstetrical Society, Dr. Madden related the history of a case showing that the ordinary form of the female syringe is not so harmless an instrument as is commonly supposed. The patient, while using an astringent vaginal injection, five weeks after delivery, had a sudden attack of intense uterine colic, which was followed by severe metro-peritonitis. There was almost complete collapse, accompanied by uncontrollable retching, and for several days the patient's life was in great jeopardy. A portion of the injected fluid had evidently passed through the patulous os into the cavity of the uterus, which was in a state of subinvolution, and thence through the Fallopian tube into the peritoneal cavity.

The foregoing is only one of a number of similar accidents which have been reported within the past few years, and in some of which death has resulted. No instrument is in more common use than the vaginal syringe. Physicians recommend it and patients use it without any idea of its possible danger. Dr. Madden regards it as both objectionable and imperfect; objectionable, because of the

possibility of its producing injurious and dangerous effects from the force with which fluid may be thrown into the vagina or even into the uterus; and imperfect, because, to produce any permanent benefit by injections in a case of inflammation or congestion of the cervix uteri, for example, the injected fluid must be kept in contact with the diseased part at a certain uniform temperature for a long time continuously, and this cannot be accomplished with the ordinary syringe, on account of the fatigue attending the working of the instrument, and the irksomeness of the position necessary during its use. To obviate all these inconveniences, Dr. Madden recommends the use of a utero-vaginal irrigator, which operates on the principle of a syphon, and which may be used whenever a vessel of water is obtainable. Such an apparatus is capable of sending a gentle flow of water, plain or medicated, at any desired temperature, into the vagina, for any length of time, and without fatigue to the patient.

The irrigator recommended by Dr. Madden is essentially the same instrument that is so generally known in this country as the Fountain Syringe. Its advantages over the ordinary form of syringe are well known and appreciated among American gynæcologists.

Selections.

IMPRESSIONS OF AMERICAN SURGERY.

An Address delivered at University College Hospital, Nov. 9, 1874,

By JOHN ERIC ERICHSEN, F.R.C.S.,

Senior Surgeon to the Hospital, and Professor of Clinical Surgery in the College.

GENTLEMEN—I have been requested to give you an account of the impressions that I have formed of American Surgery and Surgical Institutions during my recent visit to the United States; and although I did not go amongst our Transatlantic brethren as “a chiel amang them takin’ notes,” and still less with any intention to “print ’em,” but solely for recreation in my autumn holiday, yet I have no hesitation in complying with this request: partly because I believe that too little is known of American surgery in this country; and partly because the opportunity is thus afforded me, which might not otherwise occur, of publicly expressing my deep sense of the great honor that was conferred on me by the most flattering reception I met with from the medical profession collectively in every part of the Union that I visited. It would be unbecoming here to do more than allude to the many friendly and cordial acts of private hospitality that were extended to me by individual members of our profession, and which have left a deep and pleasing recollection in my mind. But I may, without restraint, express my acknowledgments to the profession in America for the warm and hospitable and hearty welcome that was given to me wherever I went, east or west, north or south, from New York to Chicago, from Boston through Philadelphia and Baltimore to Washington; and for the splendid hospitalities of which I was in most of these cities on several occasions the recipient, as the guest of institutions or of the general body of the profession. I can only explain the reception I thus met with—a reception unparalleled, I believe, in the social history of our profession—on the assumption that it was not to me individually that so much honor was intended to be done, but that a compliment was thus paid to the surgical profession of Great Britain, of which I was considered the

representative, and which was thus honored through one of its members by our American brethren. But I must leave these topics, agreeable as it may be for me to dwell upon them, and grateful as the recollections conjured up by allusions to them are, and proceed to tell you, in a few words, what my general impression is of the profession, the schools, and the hospitals of the United States.

And first, as to the Profession, I may at once say that it appears to me to occupy in America, relatively to the rest of the community, a far higher social status than it does in this country. The reason for this seems tolerably obvious. In the absence of an exalted hierarchy in an established church and of great dignitaries of the law, these professions do not offer sufficient inducement for men of the highest intellectual calibre to enter them. Medicine therefore stands prominent as probably the best-educated, certainly the most scientific, and consequently, in a country where education is so widely diffused and so much regarded, the most respected, of the professions. And in the absence of all titled classes, it can socially more than hold its own in competition with the trading and financial elements which are such prominent constituents of the society of most of the American cities. Perhaps, also, the high position that medicine occupies is owing, in some respects, to the greater uniformity of practice that prevails amongst medical men in America than with us. For, just as in the Law there is no division into barristers and solicitors, so in Medicine there is none into physicians, surgeons, and general practitioners. Special aptitude, inclination, or opportunity will necessarily lead men to a greater eminence in particular departments of the profession. But the subdivision into classes and specialties, which is so prevalent here, is unknown in the United States. With the exception of hospitals for diseases of women, I know of no special hospital in any of the large American towns; and I think that no better proof can be adduced of the inutility of the multiplication of these pseudo-charities, which are too often established in order to foster private gain under the flimsy shelter of that much-worn "cloak" which "covers a multitude of sins," than this fact, that in a population larger than that of Great Britain, with a numerous, highly educated, and active profession, it has not yet been found necessary to institute such establishments.

Surgery in the United States certainly stands at a very high level of excellence. The hospital surgeons through-

out the country have struck me as being alike practical, progressive, and learned in a very high degree. In practical skill, and aptitude for mechanical appliances of all kinds, they are certainly excelled by no class of practitioners in any country. They are thoroughly up to modern surgery in its most progressive forms, and I have never met with any class of men who are so well read and so perfectly acquainted with all that is done in their profession outside their own country. It would be a great injustice to American surgeons for it to be supposed that surgical skill is confined to the large cities or to the few. On the contrary, I know no country in which, so far as it is possible to judge from contemporary medical literature, there is so widely diffused a high standard of operative skill as in the country districts and more remote provinces of the United States. The bent of the mind of the American surgeon is, like ours, practical rather than scientific; in fact, there are the same mental characteristics displayed in him that we find here—the same self-reliance, the same practical aptitude, the same *curative* instinct, which leads him to consider his patient rather as a human being to be rescued from the effects of disease or injury than as a scientific object to be studied for the advance of professional knowledge. How, indeed, can it be otherwise than that there should be such a resemblance? It is true that in traveling through America one is struck by the fact that there is a singular combination of the new and the old—of the strange and the familiar. That there are differences of a remarkable character between the New and the Old World there can be no doubt. I use the word “different” rather than “foreign,” because I feel it impossible to apply the word “foreign” to anything American. There are differences in climate, differences in the physical configuration of the country. The verdure that clothes its hills and the vegetation that fertilizes its plains are different from those that we meet with here; but man, in all his characteristics, is exactly the same. There appears to me, indeed, to be as great, if not a greater difference between the mental characteristics of an Englishman and some of the other inhabitants of Great Britain than there is between an ordinary Englishman and an American of the Atlantic cities. It may be truly said, though perhaps in a sense slightly different from that in which the poet used the words, that

“Cœlum non animum mutant qui trans mare currunt.”

Those who have crossed the great ocean have changed their clime, but not their characters.

The similarity that exists between American and British surgery, and which has struck me very forcibly, arises not only from the great resemblance that exists between the American and the English character, but from two other causes which have largely contributed to this end. The Art of Surgery is in a great measure traditional. The method of doing things in surgery is transmitted directly from the master to the pupil. The American surgeon of a past generation acquired in this way the traditionary art of British surgery, and has transmitted it directly to his descendants. Surgeons of both nations drew their inspiration from the same source and drank at the same fountain of knowledge. The names of Cooper and the Bells, of Liston and of Brodie, are as familiar to the ears of American surgeons as they are to those of this country. I was much struck when visiting the oldest hospital in the United States—the Pennsylvania General Hospital at Philadelphia—by seeing over the entrance to the operating theatre the portrait of a face that I had often seen delineated in this country. At first I thought it must be that of one of the American surgical worthies of a past generation—of Physick or of Mott, of Warren or of Mutter; but on closer inspection I found that they were the well-known features of him who was in his generation *facile princeps* of British surgery—Sir Astley Cooper. Not only have British traditions thus penetrated deeply into the surgery of the United States, but the modern American surgeon derives his information from the same sources as does his British contemporary. *The Lancet* is reprinted, and is as widely circulated in the States as in this country; and I find in my own case that my pupils in America are probably more numerous than those in Great Britain. One of the great advantages—and it is a very great one—that an English writer enjoys, is that he addresses eighty millions of people, and that his works are not only disseminated throughout his own country, but, if of any value or importance, are eagerly sought after by that still larger body of readers existing in the “Greater Britain” which now encircles the globe. And if it be true, as has been said, that the judgment of enlightened foreign contemporaries is an anticipation of that which posterity will give, he may possibly have a foreshadowing of the verdict that a future generation of his own countrymen will pass upon him, in the estimate in which he

is now held amongst those who inhabit the regions beyond the Atlantic.

The mode of instruction in the Medical Schools of America is necessarily very much the same as here. But there are some differences. Thus, the course of education required is generally shorter than with us, and no preliminary examination in the way of matriculation is required before a young man can enter upon his medical studies. This undoubtedly is a great evil, and as such is much deplored by many teachers to whom I have spoken on the subject; but I am told that, in the present state of things in America, it would be impossible to sift the candidates for a profession, or to establish such an ordeal as a matriculation examination. About the systematic instruction I have nothing to say. There is no essential difference in this respect between England and America. It is everywhere much the same. Dissection is easy to be obtained, and the bodies used for that purpose are either furnished gratuitously to the students or supplied at a low cost. There is but a nominal fee required for hospital attendance. The whole system of medical education, indeed, is far cheaper than with us. The chief difference that I have observed is in the method of communicating clinical instruction. The medical schools in the principal cities of the States, especially in New York and Philadelphia, are so enormous that the classes would be too large to be conducted through the wards of a hospital. Classes numbering from 600 to 800 are not uncommon. At Professor Pancoast's introductory lecture at Jefferson College, Philadelphia, there were probably 600 students present; and at my last visit to the clinical theatre at Bellevue Hospital, New York, it was estimated that a thousand students were present. It therefore becomes necessary to bring the patient to the students, rather, than, as with us, the pupils to the patient. This is done by raising him off the framework of his bed on a small platform running on wheels, and thus carrying him without any disturbance of position into the clinical theatre, where he is examined and the case discussed. I will give no opinion as to the value of this method of teaching in medical cases, but in many surgical cases it appears to me to be far more useful than that which is generally adopted in this country. The surgical disease or injury can be more readily displayed in this way to a large body of students than it can when they are crowding round a bed, standing in one another's way, and often hampering the pro-

ceedings of the surgeon. There is one peculiarity in the mode of instruction in American hospitals which deserves mention. It is this: that each surgeon of the hospital often only serves for a short period of the year—four to at most six months; each of his colleagues in rotation taking up the practice and the clinical teaching during the remainder of the term. The advantage of this system is, that the teacher is not exhausted by continuous work, but returns with refreshed energy to his duties.

The Hospitals in the United States are, as with us, supported by voluntary contributions or by endowments from wealthy benefactors. The Americans are munificent in their charity, and hence these institutions are numerous and well organized. America has two sets of hospitals, the old and the new. Like England in some of its larger towns, it is still embarrassed by the hospitals erected in pre-sanitary days, under systems of construction which time, experience, and the advance of scientific knowledge have proved to be erroneous, in which septic diseases are readily generated and become largely destructive to the patients. These institutions are, however, undergoing a process of conversion which will speedily do away with many of the evils inseparably connected with such buildings. The Americans learned a hard lesson in the deadly struggle of the War of Secession—a lesson which is not likely soon, if ever, to be forgotten by so practical a people, unfettered by old prejudices and preconceived opinions. The lesson to which I allude was this: that wounded and injured soldiers could only safely be treated in the open, in hut or barrack hospitals. This lesson has been taught to Europe by the more recent experiences of the Franco-German war, with what results in the future yet remains to be seen. That the barrack or hut system is superior to any other for surgical cases there can be no question. The misfortune is, that in large towns, where ground is expensive and difficult to be procured, this system is, owing to the space required, not easy of adoption. There are also certain obvious inconveniences connected with it in those cases in which clinical instruction is required to be carried on in the hospital. The problem, then, to be solved in the construction of modern hospitals in large cities appears to be, how to combine the best condition for the patient with economy of space and proper facilities for the student. This problem is in process of solution in America. Indeed, it has, I believe, already been satisfactorily solved.

The new hospitals in the United States are generally built upon a uniform plan, having a central building for the administrative department, and wings for the reception of patients. This is the general plan of the construction of such hospitals as the Presbyterian, Mount Sinai, St. Luke's, and others at New York; of the Episcopal and the New University Hospital at Philadelphia,—and is in accordance with the best principles of hospital construction as practiced in Europe. But these hospitals, magnificent in construction and in all their appliances as some of them are, have not been found sufficient to satisfy the sanitary requirements of American surgeons. Accordingly the barrack system for surgical cases is now being adopted. It is proposed to erect, in the gardens of the Bellevue Hospital at New York, a detached barrack building for the reception of cases of surgical operation and injury. And a similar detached ward will be constructed in connection with the Hospital for Women, where, under the energetic action of Marion Sims and of Emmett, the number of operations has increased very greatly of late years. At the Presbyterian Hospital in Philadelphia such a building is in course of erection, and will be completed by the commencement of next year. At the Roosevelt Hospital, New York, without exception the most complete medical charity in every respect that I have ever seen—a hospital the construction of which reflects the greatest credit upon its designers,—in this hospital, which is constructed on the plan of a central administrative department, with lateral pavilions, there is a large detached barrack-ward erected in the garden, having no communication with the general structure except through an open corridor. This barrack building or ward is devoted solely to the reception of acute surgical cases. It consists mainly of one large ward, containing thirty-six beds, arranged two and two on either side in the interspaces between the windows. It has an open basement, and a large ventilating space between the ceiling and the roof; and every appliance that modern science can suggest, in the way of securing efficient ventilation, cleanliness and warmth, has been expended upon it. This ward, filled with surgical cases, has now been opened for nearly three years; and I was told by Dr. Weir, who kindly took me over it, that during that time there had only been one case which was supposed to be pyæmic—a case of so-called “pyæmic meningitis” following urethrotomy; any way, a case of blood-poisoning probably rather from

self-infection than from external contamination. In addition to this magnificent barrack-ward there is in the gardens attached to the Roosevelt Hospital a separate hut for the reception of erysipelas cases that may be brought to, or might accidentally develop in, the institution. The Roosevelt Hospital appears to me to be a model that might with great advantage be copied in this country, especially in those towns where it is becoming necessary to destroy pyæmia-infected infirmaries and to construct new hospitals. It is a perfect model for a hospital of from 150 to 250 beds; and the plan admits of its indefinite augmentation by the addition of pavilion wings and barrack-wards.

But admirable as this institution is, an attempt has already been made to improve upon it. The American surgeon, as I have already told you, is progressive. He invariably tries to go from good to better. He will not remain content with those appliances and means which might have been sufficient for a past generation, but are no longer equal to the requirements of the present day. Dr. Billings, of the United States army, one of the most learned and advanced surgeons of the day, is superintending the construction of a hospital at the "Soldiers' Home" near Washington, a magnificent establishment, the Chelsea of America. There is no barrack or hut attached to this hospital, as it is intended for chronic cases only; but, should occasion require, such a building might easily and cheaply be run up in connection with it. I will mention to you some of the principal points that Dr. Billings is carrying out in connection with this hospital, as they are, I believe, quite novel in this country, although some of them have been adopted in the more recently constructed institutions in the United States, which I have already mentioned. The points are these:—The hospital, like all modern American ones, has a central administrative building and two wings or pavilions for the wards. It is three stories high. The central administrative building contains the staircase, lifts, furnace-chimney and air-shafts. The basement story throughout the building is open; and the remarkable point in the construction of the hospital is this, that all the domestic offices, such as the kitchens, laundries, etc., are at the top of the building, under the roof on the third story. In this way there is no possibility of contamination of the atmosphere of the hospital from these domestic sources. The first and second stories of the pavilions are occupied

by the wards. The walls are parianized; no angles are left in them to harbor dust and dead air, but they are carefully smoothed and rounded off. The ventilation of each ward is independent, and separated from that of the main centre building, and of every other ward. The waterclosets and lavatories, which will be of the most modern construction, also possess an independent system of ventilation. The system of ventilation is briefly as follows:—There is a large brick air-shaft about six feet square, running up the centre of the administrative building, through the middle of which an iron flue ascends, carrying up the smoke and the heat from the furnace below, which is used for heating water that is required for warming the house and for the working of a small steam engine employed for the general purposes of the establishment. The air in the brick shaft is thus always kept warm, and an upward current is established. Into this main shaft, lateral air-shafts, about two feet square, run from each ward. They lie between the floor and the ceiling, communicating with the ward by traps, which can be opened or shut at pleasure, and so arranged that the air can be drawn from the top or bottom of the wards as may be required. Fresh air is pumped into the wards through a large air shaft opening 200 feet from the hospital, into which the air is driven by a fan worked by a small steam engine, 5,000 cubic feet per bed per hour being thus thrown in and passed through the wards. In winter the air can be warmed by passing over coiled hot-water tubes; in summer it can be cooled by being iced. The isolation of each ward is complete. It is effected by means of a transverse corridor stretching across the whole depth of the building between the ward and the central compartment, open at both ends, and shut off from the ward by double swing doors.

In all the modern hospitals that I have visited in the United States, I have been particularly struck with the extreme attention to cleanliness in all that concerns baths, lavatories, and waterclosets. These appliances are as perfect as they are substantial, and as ornate as are to be found in the best private houses. They are invariably carefully isolated from the wards. Great attention is also bestowed upon the disposal of foul linen, which, as a rule, instead of being carried through the building, is conveyed directly from the ward down a separate lift in the central department. The laundries also are models of cleanliness, and generally detached from the main build-

ing. The whole of the washing of the clothes, drying, etc., is rapidly done by steam machinery. Hot air chambers are also provided for the rapid drying of damp ward linen. The floors are of hard wood, and are dry-rubbed. Fire-proof staircases and hydrants having a continuous water supply are ready in case of emergency. In many hospitals there are spacious wooden piazzas or verandahs running round the building, and communicating directly with the wards, for air and exercise in summer.

There is a peculiar system adopted in many of the modern American hospitals—having private rooms for the reception of patients who can afford to pay. The charge for these rooms varies from two to five dollars per day. The patient is under the care of one of the medical officers, who receives his fees as he would in an ordinary private attendance. The system is well suited, in cases of sudden emergency, to a country in which there is so large a floating population as in the States, but it is also adopted in cases of chronic disease, as a matter of convenience by many who come from a distance for operation or treatment.

Surgical practice in America does not differ in any very essential respects from that adopted here. There are necessarily some modifications, and many ingenious appliances; but essentially there is no greater difference between American and English surgery generally than is to be found between the practice adopted in any two London hospitals.

The treatment of wounds is sufficiently simple, and presents nothing peculiar. I observe that American surgeons are careful about the drainage of wounds, and employ drainage tubes or similar appliances freely.

“Antiseptics” do not appear to be much, if at all, employed; at least, in a methodical form. Carbolic acid, in the form of lotion or wash, is commonly used. Indeed, antiseptics are not so much needed in the American hospitals as in ours. The object of antiseptics is to prevent the contamination of a wound by septic impurities from without. These sources of contamination do not exist in such hospitals as those I have been describing to the same extent that they do in less perfectly constructed and less hygienically conducted establishments, and hence antiseptics are proportionately less needed. In America it is attempted to accomplish by improved construction of hospitals, and by close attention to hygienic requirements, those great results which we are here driven to attain by “anti-

septic" methods of treatment. In consequence of the ignorance in all matters that relate to the hygiene of hospitals that prevails among the architects and managers of these institutions, an undue burden of anxiety, responsibility and care is thrown upon the surgeon, who is now unceasingly engaged in combating septic disease; and in order to keep down that rate of mortality which is the direct consequence of septic hospital influences, he is driven to the employment of elaborate and complicated methods of antiseptic treatment. Cleanliness in its broadest sense is the best and most efficient antiseptic. If the constructors and conductors of hospitals were acquainted with or would adopt those hygienic rules on which hospitals should be built and managed; if hospitals were not overcrowded; if the system of ventilation was perfect; if there was a continuous water-supply, and a proper isolation of wards and distribution of patients, the causes of septic diseases would not be generated. Those foul and filth-begotten diseases, pyæmia and hospital gangrene, would disappear, and antiseptics, in the absence of septic influences, would become unnecessary. Contamination of hospital air would be prevented; we should not, as now, under defective hygienic arrangements, first allow the pollution to take place, and then be driven to the use of antiseptics in order to prevent infection of wounds by the already septic-laden atmosphere. Under the present system we begin at the wrong end. Instead of preventing the possibility of atmospheric contamination by perfect hospital hygiene, we allow the septic poison to be engendered, and then, before it can be implanted on the wound, seek to destroy it by the employment of chemical agents.

With regard to Anæsthetics I have little to say. Ether is invariably used at Boston, and is preferred to chloroform by many hospital surgeons in other American cities. I saw it given in some operation cases at the Massachusetts General Hospital, which has the great honor and privilege of being the institution in which anæsthesia was first employed in any surgical operation; it was administered here on a sponge, without any apparatus or complicated contrivance.

Except in Boston the Museums are still in an undeveloped condition. That of Dr. Mott, at New York, was unfortunately destroyed by fire; but Dr. Wood, with characteristic energy, is trying to establish one at Bellevue. At Philadelphia the splendid collection of Hyrtl's injections have lately been acquired by purchase. But there

is one museum which is so unique, so admirably arranged, and so interesting, that I must direct your attention to it for a few minutes. It is the Museum of the Army Medical Department at Washington. This magnificent collection, illustrating not only every possible variety of gunshot and arrow injury, but also those diseases which are more fatal than the bullet to an army in the field or camp, has, under the able superintendence of Surgeon-General Barnes and of Drs. Otis and Woodward, been most admirably arranged and catalogued. It occupies a building that has a melancholy interest connected with it, as being the theatre in which President Lincoln was assassinated by Booth in 1865. The collection itself is well known in Europe through the medium of those beautifully illustrated and ably collated medical histories of the great War of the Rebellion which have been published under the superintendence of the Medical Department of the United States Army. Many of the specimens in this museum are quite unique. I would especially refer to a series illustrating splintering of the inner table of the cranium without fracture of the external table consequent on contusion of the skull; the splitting of conical bullets against sharp edges of bone; a collection of foreign bodies, including arrowheads, forming the nuclei of calculi extracted from the bladder; and a remarkable series of specimens of injuries of the bones inflicted by arrow-wounds in Indian warfare. To the physician the collection of diseases of the large and small intestine, resulting from dysentery, diarrhoea, camp fevers, typho-malaria, etc., is most interesting. The preparations have been admirably put up by Dr. Woodward. In this collection will be found some very interesting specimens of resection of joints and bones after gunshot injury. I saw one patient in whom the head of the humerus and several inches of the shaft—in all, seven inches of the bone—had been excised. He was now a porter in the museum, had a most useful and well-developed forearm and hand, serviceable for every purpose. There was not only the preparation, but the living example of this triumph of conservative surgery. The case illustrates the important fact that the upper end of the humerus may be resected below the insertion of the deltoid and yet a useful limb be left. I saw another case of an officer who had lost about four inches of the shaft of the humerus, and in whom the limb was equally useful. In fact, American surgeons are very skilful in the management of resections. Sayre has removed the head of the

femur fifty-two times, and in his wards I saw some admirable results of the operation, due in a great measure to the very careful after-treatment to which he subjects the patient, and on which he lays great stress.

I have thus given you a very brief sketch of some of the impressions that I formed of our profession during my recent visit to America, and in so doing I have purposely, as far as possible, omitted mentioning the names of American surgeons, because I felt that there are so many so highly distinguished that it would be invidious and perhaps unjust to make a selection of a few amongst the juniors, and amongst the seniors it would be needless to name to you such men as that Nestor of American surgery, Gross, or of Pancoast, of Philadelphia; of Van Buren, Wood, Parker, or Sayre, of New York; Bigelow or Hodges, of Boston; Smith or Johnston, of Baltimore. I can only say that the surgical profession in America contains a phalanx of men alike distinguished for their skill and their knowledge, at least equaling what any European country can produce. And, in conclusion, I would advise those amongst you who wish to see and study the practice of surgery elsewhere than in the school in which you have been brought up in this country, who are not content throughout their lives *jurare in verba magistri*, to run in the one professional groove in which they have been launched, but who unfortunately have not acquired that fluency of the speech of Germany or of France that would render a residence in those countries profitable for the purposes of study, to take a trip across the Atlantic—a voyage in itself interesting, amusing, and health-giving,—and to spend a few months in visiting the great hospitals and schools in the cities of the United States of America.—*London Lancet.*

CASE OF ANEURISM OF THE ABDOMINAL AORTA

SUCCESSFULLY TREATED BY LARGE DOSES OF IODIDE OF POTASSIUM.

By THOS. M. MATHEWS, M.D.,

Mount Enterprise, Rush County, Texas.

During the past winter I was called to attend Mrs. W., æt. 38, married some twelve or fifteen years, but had never had any children. I failed at the time to detect any cause for her general ill health, but in April last I discovered a large aneurism of the abdominal aorta, which on close examination I found to extend from under the sternum obliquely downward to below the umbilicus.

Having been taught that such a condition was necessarily fatal, I should have given the case up as such had I not seen the article, on page 539 of the *Amer. Journ. of the Med. Sciences* for April, 1874, by Dr. George W. Balfour, on large doses of the iodide of potassium in such cases. As a *dernier ressort* I determined to give the drug a trial. I at once put the lady upon twelve and a half grains dissolved in the syrup of sarsaparilla three times a day, and increased the dose each day till it reached fifteen grains. I then gave fifteen grains four times in the twenty-four hours. *My patient began at once to improve*; the large doses seemed at first to irritate the stomach a little, but this soon passed away. When I began the use of the remedy the lady was confined closely to her bed; could not sleep unless under the influence of chloral; now, five months have passed, she is able to be up nearly all the while; sleeps without the soporific; rides about, even on horseback, a good deal, and is apparently in very good health. The aneurismal thrill and the bruit, once so distinct, are nearly absent, though the remains of the "sac" can be distinctly felt, yet very much smaller than it was at first. I used nothing but the iodide of potassium, except during June, when I gave, between the iodide, doses of fl. ext. ergot, 3j, and tr. digitalis, gtt. v. I have kept up the use of the iodide steadily till now, except for two weeks; at present I am giving iodide of potassium, gr. v, and carbonate of ammonia, gr. iij, three times a day.

Believing that in the potassic salt we have a remedy which will in a very great measure control, if not cure,

this disease, which was formerly believed to be incurable, and hoping that others may be induced to try the remedy, I submit it to the consideration of the profession.

A STRYCHNIA EATER—STRYCHNIA AN ANTIDOTE TO ALCOHOL.

The newspapers contain an account of a man residing at Gilroy, Cal., who is in the habit of using strychnia in enormous quantities to counteract the effects of drunkenness. Not wishing to give currency to a statement on mere newspaper authority, we wrote to Dr. H. C. Morey, of Gilroy, whose name was mentioned in connection with the matter, asking him to send us an authentic report of the facts of the case. In answer to our request, Dr. Morey kindly furnishes the following statement.—[Ed. *P. M. & S. Journal.*]

GILROY, March 15, 1875.

Your letter of inquiry in reference to my personal knowledge of the reported strychnia eater, is at hand, and I hasten to reply. The individual in question is a man about fifty-two years of age, about five feet eight inches in height, and weighs about one hundred and fifty-eight pounds; dark complexion, very plain in appearance, very eccentric and peculiar in his habits, and always keeps his own counsel; has a good intellect, but a limited education.

I first became acquainted with this man in the fall of 1861, and soon learned of his habit of eating strychnia, after a long and continued debauch, and in a condition bordering on delirium tremens. The first time my attention was particularly called to it, he wished me to give him a bottle of strychnia, which I did at night about bed time. He took the bottle, pouring the strychnia into his hand, and threw it into his mouth as carelessly as though it were salt; and, in the course of half an hour, not feeling the effects from it that he wished, he repeated it, and continued to do so until he became perfectly sober. The quantity required would correspond to the length of time he had been drinking, and the quantity of whiskey he had drank. I was struck with the wonderful effect it had to so completely sober him, and leave his system so entirely free of any nervous disturbance, and without the reddened and bloated appearance of the face, the dull,

heavy eyes, and irritable stomach of the drunkard. After a two weeks' drunk, with all the appearances of approaching delirium tremens, he got up in the morning with his mind clear, his eyes bright, his skin clear and fair, and with all the appearances of a man in perfect health and vigor, and ate as hearty a breakfast as usual, and went to his work as though he had never taken a drop of whisky in his life. My curiosity being excited at what seemed so unaccountable an occurrence, I began questioning him as to when he commenced its use, and what induced him to take it, but found him very reticent, and have not, to this day, ascertained the causes that first led him to its use. All he will tell is that he commenced its use in 1856. From 1861 to 1867, I saw him very frequently, and almost as often have seen him take the strychnia, until it ceased to be a curiosity, except to study its physiological action. In every instance when he took it, every appearance of dissipation would disappear in a very short time. Whether *strychnia* is an antidote to alcoholic poison, and *vice versa*, was a study for which I could find no authority to guide my conclusions.

From 1867, I did not see him until the month of November, 1874, when he came to this place and called on me for strychnia, as of old. I told my clerk (Mr. Martin) to give him all he wanted. He gave him a bottle, from which he took about twenty grains. In an hour he was all right, and sober as ever. This caused Mr. Martin to write the article you can find in the "Druggists' Circular" of December, 1874, and from that article arose the newspaper articles.

I have experimented with strychnia and *nux vomica* as an antidote to the effects of alcohol, and invariably with beneficial results.

SPINAL ARTHROPATHIES.

By S. WEIR MITCHELL, M.D.,

Member of the National Academy of Sciences.

It has been my good fortune within the last two years to meet with a number of cases of disease of the joints of the legs, associated in each instance with atrophic states of limited groups of muscles, and offering more

or less distinct clinical evidence of being due to spinal disease. I shall have occasion, as I proceed, to show how these cases differ from any as yet described, both in their early symptoms, and in their more favorable prognosis, but I shall perhaps make clearer my meaning, if first I call attention, however briefly, to the history of spinal and neural arthropathies, a subject which owes its best study to American and French students. The history of spinal arthropathies is well told by Charcot, in his *Leçons sur les Maladies du Système Nerveux*, Paris, 1872-73, p. 100 et seq. This author distinguishes joint lesions of spinal origin as of two varieties. Those which are acute or subacute and are accompanied with redness, swelling, and sometimes with more or less violent pain. The second class he describes as chronic, of slow growth, and, as I shall point out, as being remarkably different from the first-named disorders.

The history of this subject is somewhat interesting, and the more so, because to an American physician belongs the long-forgotten credit of the first discovery that "an obvious spinal cause may produce a rheumatism characterized by heat, pain, redness, and tumefaction." The quotation is taken from the second paper on rheumatism by my father, the late Dr. John K. Mitchell. In his first essay he described cases of Pott's disease, in which, below the diseased region, there were acute inflammations of the joints, which proved amenable to treatment directed to the point of spinal lesion.* M. Charcot, *op. cit.*, pp. 100, 101, in acknowledging the first mention of these facts, adds, correctly, that this cause of arthropathies is rare, and, apparently ignorant of Dr. Mitchell's second paper,† says that traumatic lesions of the cord are more often the parent of joint disorders, and refers to Gull‡ for instances of spinal commotion as competent to occasion a like result. Until in my work on injuries to nerves I recalled attention to the true author of this clinical discovery, Gull has usually had credit for being the first original observer of these interesting facts, while actually the credit is due to the American author. In his second paper Dr. Mitchell describes the very curious case of Dr. Parker, of Elkton, Maryland, in October, 1831. This gentleman, who had previously had rheu-

* Am. Journ. Med. Sci., 1831, p. 55.

† Am. Journ. Med. Sci., 1833, p. 360.

‡ Guy's Hosp. Repts., 3d series, t. iv.

matism, was thrown from his carriage, and, falling on his back, was instantly paralyzed slightly in his arms, but totally in his lower limbs. The next day he had swelling, pain, redness, and heat in the joints of the hands and wrists. These symptoms were thereafter aggravated by pressure upon the seat of injury in the spine, but relieved by the application of certain remedies to the spine. They shifted their place from joint to joint in the upper limbs, but did not affect the legs.

In 1846, Dr. Scott Alison* described very clearly the arthropathies which occur in hemiplegia, but incorrectly ascribed them to the lithic diathesis under which he presumed his patients to be suffering, and to which he conceived all such cases must be due. Since then, Brown-Sequard, Charcot, and the author, as well as some others, have recalled attention to hemiplegic arthropathies. Like forms of joint disease have been seen in myelitis, and as results of spinal tumors, while in locomotor ataxia, Charcot has delineated with great fidelity a more chronic but not less troublesome form of joint disease.

According to Charcot, similar lesions have been seen in progressive muscular atrophy by Patruban, Remak, and Rosenthal, but I have been unable to procure the papers referred to. Finally, in 1864, I described, in conjunction with Drs. Morehouse and Keen, the joint diseases caused by injuries to nerve trunks, and again and again since I have illustrated anew this clinical sequence, by numerous reports of cases of manifold forms of nerve injury.

The pathological mechanism of the various neural arthropathies is clear only up to a certain point, beyond which all is as yet obscure. It has been made most probable, that all the spinal arthropathies are due to disease of the gray matter of the anterior cornua of the cord. It has been shown that this disease of the gray matter is not caused by the inertia to which some forms of spinal disease condemn the patient, and that neither in these cases are the peripheral nerves at fault. It has also been suspected that the cerebral arthropathies are caused by a descending sclerosis finally involving the anterior tracts of gray matter in the cord, but as to this I have a reasonable doubt, owing to the very early date at which I have sometimes seen joint lesions follow a cerebral hæmorrhage,

* *Lancet*, 1846, vol. 1, p. 227.

and to the suddenness of production, and the great generalization of the joint lesion in some of the same class of cases. It has been remarked that the joints swell from fifteen days to three months after an apoplectic attack, coincidently with the coming on of the "late rigidity," which we now commonly ascribe to descending sclerosis. I have, however, again and again seen the joint lesions come on earlier, and without any muscular rigidity, and I have also seen them get entirely and rapidly well, which does not look as if they could in these cases have been due to sclerosis. Thus in one case, they came on the day after an attack of left hemiplegia, in another on the third day.

The local peculiarities of most of the spinal and cerebral arthropathies are not such as enable the most acute clinical observer to distinguish them from some of the ordinary types of rheumatism, a fact which certain authors have frankly admitted. The general clinical characters, says Charcot, which differentiate them from common rheumatism of joints, are their limitation to the joints of the members afflicted with palsy, their relation in time to hemiplegia, the coexistence of other trophic troubles; but, if we begin by suspecting that some at least of our general rheumatisms may be of spinal birth, these would be only points in our favor, and the cases of Pott's disease in which remote joint lesions follow it, without palsies, would enable us to believe that such a spinal condition from disease might sometimes exist as would give rise to rheumatic joints without the concurrent existence of other troubles more palpably of neural origin. Moreover, it has occurred to me twice, to see cases of chronic rheumatism following acute rheumatism where an apoplectic attack produced a few days later an enormous exaggeration of the joint disease on the palsied side, so that there is something in the status of a palsied limb which favors the increase of an already present rheumatism.

Yet, however he may differ as to whether rheumatic fever be ever a spinal disease, all pathologists now admit the existence of joint disease distinctly due to neural lesions, but as to the mechanism of the production of these arthropathies, we are still at fault. Our discovery of arthropathies caused by injury of nerve trunks, seemed to promise to make the research more simple, but as yet it has done little to aid us. It has been made clear, however, that in these, as probably in central lesions,

they are due rather to irritative states than to absolute defects of power. It has been shown that they are caused neither by vascular palsies nor by vasal spasm, nor yet by inertia, which is, as we know, competent to cause, in limbs long at rest on splints, certain chronic forms of joint disease. I have certainly seen neuro-traumatic joint disease break out suddenly and with terrible severity within three days of a nerve lesion, which but slightly affected either motion or feeling, and which certainly gave rise to no atrophies, so that it also seems unfair to attribute them to defects of nutrition in this sense or in this direction.

I have elsewhere pointed out how curiously even very slight lesions of nerves affect the cutaneous secretions, and it seems fair to infer that disturbances in the chemical balances of the deeper tissues may likewise arise from as slight neural causes. How far these may also come from central disease, and how competent in either case they may be to trouble the life of the tissues and occasion local inflammations, we can hardly yet determine. It is but an hypothesis, yet of some value as giving a fresh direction to research. It is indeed hardly possible to refrain from speculation upon a subject at once so open and so interesting.

I have seen but one case of entire annihilation of nerve influence in a limb, and in this all the nerves were cut save the fibres which pass with the vessels. No notable joint lesions followed the section. The sections of single nerves never altogether insulate neurally a part even of a limb or lesser member,* but it is commonly the partial sections of one nerve which cause joint disease, and then arises this curious question: Do they act directly along the injured peripherally distributed fibres and thus affect the joint, or does the local irritation influence the centre, and through it and the still entire nerve threads act upon the joint to disorder its nutritive life? I incline to this latter opinion, which is favored by various reasons, and especially by some of the cases I have elsewhere reported. But if this view be taken and we come to conceive of a state of the centres in which there were disturbance from without competent to put them in a state to cause joint lesions, we are readily made able to add

* Section of a nerve always leaves the joint in relation with other undestroyed branches.

another step in belief, and conceive that sometimes these centres may without peripheral irritations be thrown into such a state as to occasion these lesions.

Hitherto, in all of the reported cases of neural arthropathy, there has been a passive central or peripheral nerve lesion, and usually there have been also precedent symptoms not related to the joints, such as atrophy, paralysis, anæsthesia, or hyperæsthesia. In three of the four histories which I shall here relate, the joint lesion came first, existed alone for a time, and was followed by other nutritive, sensory and motor conditions of the limbs, which revealed the spinal column as the organ upon which the whole chain of phenomena depended. Surely this is a fact of great pathological significance, since it is open to suspect that if the spinal lesion had been checked at a certain point we might have had only the joint disease, or such slight derangements in the way of numbness or lack of power as might readily escape notice, or as often are seen by acute observers in rheumatisms suspected by no one to be of neural birth. One possible fallacy may exist to mar this view of the pathogenesis of some arthropathies, and to it I shall by and by refer.

CASE I.—Mr. B., of E. Pennsylvania, consulted me last year in the autumn, on account of a painful affection of the right knee-joint. Mr. B. was a bank officer, æt. 48, of slight figure, free from previous disease, and of untainted descent. In the spring of 1873 he was subject to severe mental and moral strain, and for some weeks to unusual exertion a-foot. In June he had slight pain in the dorso-lumbar spine, which was eased by rest. The accompanying sense of lassitude left him after a short summer holiday, but early in September he began to have pain and swelling and stiffness in the right knee, and at length was forced to remain at rest, the knee having been put in a splint. Despite pretty active treatment it grew worse, and he was led to consult me in November.

At this time the leg presented nothing abnormal save in the joint. There was no wasting, no loss of feeling or of electrical reactions. I advised absolute rest, pressure by sponges and bandage, tonics, and moderate doses of iodide of potassium. The joint was hot and largely swollen, the patella lifted by effusion, and the pain severe especially at night. He came back to the

city within a month. At this time there was pain and slight tenderness on the right of the eighth and down to the twelfth dorsal vertebra inclusive, an aching sense of distress over which ice caused a feeling of burning. The joint was in all respects better, but still swollen slightly, red, and painful and tender. The thigh and leg presented a curious change. The extensor group in the thigh was wasted at least one-half, the peroneal and gastrocnemial groups were similarly altered, but to a less degree. All of these muscles were much enfeebled, and responded only to galvanic currents of at least thirty cells, and best to ascending currents. The sensibility of the skin of the leg below the knee was much impaired, that above the knee but slightly lessened.

I was amazed to find so remarkable a change in so short a time, and was fortunate in having made previously so complete an examination as to feel sure that when first I saw the case the joint lesion stood alone.

For a few days I enjoined rest, with cut cups thrice to the spine. The local relief was great, and although no other treatment was then employed, a change for the better was seen at once in the joint. After a time I began to treat the knee with powerful galvanic currents, and the muscles with reversed galvanic currents. The most rapid improvement followed, and after thirty sittings I found that I got ready responses by induced currents which were thenceforward used every day. The splints were early laid aside, slight movement permitted, and when only some feebleness of gait remained, I employed hypodermic injections of strychnia.

After three months Mr. B. went home well. He has since had a short relapse, with a display of all the same symptoms in a lesser degree, but the same treatment readily overcame them, and a course of cod-liver oil and iron, with some changes in his ways of work, has sufficed to preserve him in health up to this date.

CASE II.—My second case was a woman, æt. 32, from Wilmington. She was at the head of a busy millinery business, and had been in good health, and free from pain. In the spring of 1873 she began to have pain in the left knee-joint, and after suffering some months, gradually grew more and more feeble as to the use of the left leg. In the autumn she applied to me, and was then in a pitiful state of pain and lameness. The joint was enormously swollen, and very painful, as well as most

curiously tender. The temperature was two degrees above that of the right knee, and the patella could be rocked on the distended joint. To my surprise, the whole anterior group of extensors of the leg was wasted at least one-half, and could not be stirred by the will or by any form of current, galvanic or induced, nor yet through the nerve trunks.

The sensibility was, however, unimpaired. The back was free of tender spots, the general health fair, but not vigorous, and there was no functional disturbance of stomach, kidney, or generative organs.

I treated this case as I had done the other, by galvanism until induction currents acted, and thenceforward by these latter. The general treatment consisted in the use of tonics and full doses of strychnia. The gain was sudden and steady, so that I was able, after a few weeks, to leave the case in the hands of my friend, Dr. John K. Kane, of Wilmington, under whose charge she continued to improve, so as within a few months to be entirely well.

It is, of course, possible that both of these cases may have been joint troubles originating without neural cause, and producing by reflected irritations muscular losses; or more directly giving rise to an ascending neuritis competent in time to occasion like results. The nerve tracks, however, were searched again and again in both cases for tenderness, and always in vain, while the spinal symptoms of the first case seem to have been distinct, so that, on the whole, I reached the conclusion that in both there was a limited spinal lesion, and if so in both (and here is their peculiarity), the joint disorder came first, and for a time stood alone.* The next case, as to the spinal birth of which no shadow of doubt can exist, enables us to feel far more sure that the two cases first given had also this origin. It has also this added value, that it was seen and studied by others besides myself, none of whom had finally any other view.

CASE III.—The subject of the following most remarkable history is the wife of a physician of distinction in

* The very remarkable wasting of muscles in some joint diseases, as of the hip, seems to be due to reflected irritations and not to mere inertia, but these wasted muscles usually react under electric currents as well as their healthy fellows.

a neighboring city—a woman of unusual energy and intelligence, and previously in good health.

On April 18, 1870, she first felt a slight sense of lameness in the left knee. It caused annoyance in going up or down stairs, in sitting or kneeling, far more than in walking. On the 23rd an examination revealed the presence of too much fluid in the bursa, and on the 24th the joint was distinctly swollen, and there were slight pains at times down the inside of the leg. The knee had gained in one day three-fourths of an inch in girth. So great was the tension and pain, that on the 25th absolute rest was ordered, and leeches were applied. The bleeding continued too long, and seemed to cause unusual feebleness, but on the 26th the inflammation was much lessened. Stimulants were used internally, as she seemed singularly weak, and wet cold was applied locally. A day or two later dry cold was used, and the knee was found to be easy if at rest, but very painful when stirred or even handled.

On May 9th for the first time in trying to move the leg, which by this was much more free of pain, Mrs. B. noticed a want of power to lift the limb, or to change its place from side to side. The extensors, abductors and adductors were enfeebled.

At this time the leg was put on a gutta percha splint, and kept on it two weeks with compression to the knee by sponges and bandages, while locally iodine was used.

On June 1st Dr. J. H. Brinton asked me to visit Mrs. B. in consultation. At this time there was some pain in the lumbar spine—not a very definitely fixed pain—and there were slight twitches in the thigh muscles above mentioned, and also in the peroneal group—this symptom being worse at night and very disturbing to the patient—as they sometimes moved the patella so as to give pain.

On April 24th the knee measured 14½ inches; and during June it continued to be 13 inches. The other measurements will, by and by, be mentioned; they showed at this time remarkable atrophy of the whole limb, but chiefly of the anterior groups of muscles, and there was entire loss of power to lift the leg or even to stir the extensors, or to move the part laterally; yet the joint was vastly better, and indeed quite free from pain, a slight roughness being present when it was bent. The gain took place under use of cod-liver oil, iron, shampooing, and induction currents, which at this time failed to stir the disordered muscles. The temperature of the

limb had fallen ever since the loss of power began, but, with the improvement alluded to, the limb throughout became warmer.

July 1. The foot could be rested on the floor with the knee in half flexion, and July 15th could be voluntarily raised from the floor a little, while extended.

17th. Mrs. B. was carried out of town, and finally spent the summer at the sea-side, continuing her treatment with daily sea-baths.

During July she walked on crutches, and on August 25th was able without crutches to walk a few steps, though not without limping and pain in the knee. Meanwhile the gain as to temperature, power and nutrition continued, and the sensibility, never wholly lost, became decisively better.

Sept. 5. I saw her on her return. She could now walk about one-fourth of a mile on crutches.

The measurements were as follows:—

	Over patella.	3 inches above patella.	8 inches above patella.	4 inches below patella.	8 inches below patella.
June 3, 1870.	13	13	16	10½	10½
Sept. 16, 1870.	13½	14½	17½	11½	11
June 3, 1870.	Ankle, 6½.		Sept. 16, 1870.	Ankle, 6½.	

During the autumn the improvement went on, and in November, Mrs. B. could walk a few yards without aid, but both in the winter and through the last summer it was curious to see how all of the symptoms fluctuated almost from day to day.

Early in the winter the other knee began to suffer, and precisely the same set of symptoms were seen in the right knee and leg, save that the loss of sensation was not so considerable. I had now, of course, no longer any remainder of doubt as to the spinal origin of this most interesting case.

With varying fortunes Mrs. B. passed through the winter, the joints becoming worse at times and again better, but every new onset of arthritic trouble being followed or accompanied by increase of atrophy, loss of power and sensation, and the limbs being liable to notable alterations in temperature.

June 1, 1871. Mrs. B. saw Dr. Brown-Sequard, to whom I wrote an account of her case. Under his advice she took iodide of ammonia and strychnia in increasing doses, and with these aids and steady sea-bathing became vastly better, and in the fall could walk a mile without aid. The limbs now showed a new increase in size and firmness, sensation was almost perfect, and the joints

free of pain. The winter brought, as before, some return of trouble, but not to the same extent as in the last winter.

April 1, 1872. Dr. Brown-Sequard met me in consultation, when, except the use daily of ice rubbing for the knees, no change was made.

The summer of 1872 was spent at Cape May, with the usual good effects. In October, Mrs. B. was able to walk about in-doors and out much as other women, all of her untoward symptoms having disappeared. In 1873 she went to Pittsburg to reside, and while there had no further annoyance until January, 1873, when she had a most curious and instructive attack of the old symptoms, accompanied with general feebleness, and the appearance of an eruption of herpes, which, originating on the left shoulder under the left arm, passed over the left chest. The eruption was very painful, and lasted about ten days. I did not see her in this attack, but Dr. Benham, her physician, has been so kind as to give me a full description of this incident of the case. Previous to the attack there had been some causes of weakness. The palsy and knee troubles passed away under use of oil and strychnia, and now, except as to power to kneel or stoop readily, Mrs. B. is perfectly well.

In this remarkable history of joint lesions, atrophic palsy preceded by twitching of the muscles, dysæsthesia, and altered thermal conditions, we have all the needed evidence to show that there was a central cause, and that this was a local myelitis of the spinal cord. Its clinical value lies in the fact that the joint disease distinctly preceded the remaining symptoms.

I have met with other examples of spinal disease producing arthropathies, but in all of them the spinal malady existed for long periods before it gave rise to arthritis. These histories, therefore, will teach us nothing new, and I pass on to the last, and perhaps the most remarkable of my cases. In November of last year, Dr. Bolling, of Chesnut Hill, asked me to see with him a case which had been looked upon as mere rheumatism, but which Dr. Bolling had rightly concluded to be of neural origin.

CASE IV. — The patient, Eliza M., æt. eight years. When six years of age, in May, began to complain of pain in both ankles, and to turn the feet under her in walking; braces were applied, with no relief to the pain, and they were at length removed. The trouble, nevertheless, grew better, to reappear the following spring, with pain both in the ankles and wrists. Then suddenly

the toes swelled at their joints, becoming red, tender, hot, and stiff. Within a few days the ankle-joint also became intensely inflamed, and finally the whole of both feet. Neither the knees nor the hands became inflamed. As the diseased joints grew better, which they did very rapidly during six weeks at the sea-shore, the feet were found to drag in walking, although after a time she became quite well and even active. During each of these attacks, the peroneal and anterior tibial muscles and the interossei of the feet became singularly wasted, and after each onset all of these muscles underwent within a few weeks the most amazingly rapid repair. The hands passed through like changes, but their joints became stiff, and a little rough and enlarged, without any pain, and the interossei, the thenar group, and the extensors exhibited the same speedy wasting, and the same as sudden and remarkable restoration, but in all the attacks this revival left them not quite well nor fully active, so that after each return of disease there was a slight addition to the permanent disability.

As to the latest attack, in November, 1874, I got a better account. The child when seen by me was healthy looking, cheerful, and bright. About November 10th, she began to drag the feet unusually. Then a few days later, she had nausea, and occasionally sick stomach, which endured for a week, whilst meanwhile pain appeared in the leg and in both feet, together with intense pain, heat, redness, and great swelling of all the joints of both feet. The pain was very great, and the tenderness on motion distressing; Dr. Bolling thought that taken alone, no better illustration of acute rheumatism could have been found.

The joints of the hands underwent their usual changes, becoming deformed without pain. When I first saw her in November, the appearances described were lessening in severity, but the atrophies were well marked.

Dec. 10, 1874, Dr. Bolling met the patient at my house, when I made with his aid the following careful notes of her condition. The hands present good types of the "claw hand." The first phalanges are drawn back in extreme extension, the second and third phalanges flexed. The interossei wasted the first most notably. The thumb nails look directly upwards, so as to be on the same plane as those of the fingers, owing to wasting of the whole thenar group of muscles. The palm is flattened. All of the joints are large and stiff. These peculiarities Dr. Bolling tells me nearly altogether disappear between the

attacks. The feet are cold, 85° F., bluish and congested. The joints have already lost almost all traces of disease, and are only a little stiff and swollen. The intrinsic muscles of the feet and the flexors of the feet are wasted, but the extensors of the feet, normal as to size, are slightly contracted in tonic spasm. The toe nails are curiously and deeply indented by numerous transverse furrows, probably marking interruptions of growth.

All the foot extensors are palsied, but there is still feeble power to flex and extend the toes, and extend the feet. The interossei of the hand and the extensors of the wrist are very weak, the common extensor of the fingers weak, the flexors all healthy.

Sensation as to touch, pain, localization, and temperature everywhere normal.

The electrical conditions were interesting. A galvanic current (interrupted and reversed) of 60 cells did not move the flexors of the feet, nor was it capable of moving the gastrocnemius which yet responded to volition. Powerful induced currents also provoked in these parts no reaction. Induced currents moved the third, fourth and fifth interossei of the hands, and best on the right side, but did not stir in either hand the first, second and third interossei, or the thenar group, save only the ulnar adductor, and this feebly. The extensor group in the arms reacted badly under induction currents.

There seemed to be no other muscular loss or defect, and the heart, kidneys, stomach and special senses were normal.

The symptomatology of this case of course allies it with progressive muscular atrophy, from which, however, it is set apart by most obvious clinical peculiarities.

It is said that an elder sister died of the same disease, and I ought to add that both parents are unusually healthy people.

The last case of my series is in many points different from the others, but more especially in the oddity of the hand symptoms. Apart from this portion of the case, it resembles, save in the acuteness of attack, the three others; but in it the loss of power preceded the arthritic symptoms. In the others there was joint disease of painful character, followed by atrophies, loss of power, and change of temperature, while in one only was there also loss of feeling. In all, the changes were rapid, and the cure of the wasting and palsy speedy and complete.

Reports of Societies.

CHICAGO SOCIETY OF PHYSICIANS AND SURGEONS.

(Reported by RALPH E. STARKWEATHER, M.D.)

Regular meeting April 26, 1875. The President, Dr. John Bartlett, in the chair.

Dr. Plym. S. Hayes read the following paper :

Experimental Observations on Salicylic Acid. By PLYM. S. HAYES, M.D.

It may not be without interest to review some of the considerations which caused the following experiments to be made.

In the article on Salicylic Acid that Dr. Squibb read before the Medical Society of New York, there occurs the following: "It is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics or antiferments." This, in connection with the suggestion of its internal use, and the following from Dalton's Physiology: "The action which is exerted upon the food by the digestive fluids is not that of a simple chemical solution. It is a transformation, by which the ingredients of the food are altered in character at the same time that they undergo the process of liquefaction. The active agent in producing this change is in every instance an organic matter, which enters as an ingredient into the digestive fluid; and which, by coming in contact with the food, exerts upon it a *catalytic action*, and transforms its ingredients into other substances;"—were the means of framing the question, Would the administration of salicylic acid at or near the time of the ingestion of food arrest or retard in any manner the action of the various digestive ferments, such as the saliva, gastric juice, etc., on the ingested food? It might be well, just here, to explain the reason why the word catalysis, as used by Dalton, was replaced by fer-

ment. Catalysis in the older chemistries occupied a place of great importance, and was the pack-horse on whose back was strapped many of the then inexplicable phenomena connected with this science. It is almost entirely and in some cases quite ignored in our more recent text books. Fermentation which has in a measure supplanted catalysis, refers in its most restricted sense only to that action; the cause of which is almost entirely due to living organisms. Dr. Squibb calls this class of ferments "vital." That produced by yeast, and many which occur in putrefaction, are examples of this form of fermentation. That chemical action in which living organisms have no influence; but the metamorphosis is caused by the action of some physical agent, or of some definite chemical compound elaborated by an organism—some organic substance—the same authority calls "chemical," "those which occur independent of vitality, as the production of volatile oil in mustard and bitter almonds, the effects of diastase," etc. As long as chemistry offers no explanation of "chemical" ferments, and scientific men are content to use the term, and professors in our medical colleges place the action of saliva, gastric juice, etc., under the head of ferments, we, too, may use the term without censure.

In order to experimentally answer the question, some of Squibb's unbleached salicylic acid was procured, which he says "is probably pure enough for almost all, if not for all, the purposes to which the acid is at present applied to practical uses." With this I tried two series of experiments. The first series was instituted to determine if salicylic acid had the power of preventing the formation of glucose when saliva had been added to starch which contained a portion of acid.

The second series was to determine whether the acid arrested or retarded in any measure the action of gastric juice—or its active principle, pepsin—on coagulated albumen.

First Series. The first experiment consisted in the ad-

dition of saliva to hydrated starch, with which had been boiled salicylic acid. There was apparently as much sugar present as there would have been had not the acid been employed. Before making the experiment it was observed that the acid had apparently undergone decomposition from some unknown cause. The surface of the starch was covered with iris colored patches, such as are seen when a thin film of oil is spread on the surface of water.

Less sanguine of success in proving that the acid was capable of preventing or modifying the action of saliva on starch, the second experiment was entered upon. This consisted in the addition of salicylic acid to cold hydrated starch. After thoroughly agitating the mixture, saliva was added and the agitation continued for two or three minutes when the test was applied. In this no sugar was discovered.

The third experiment was a repetition of the last one. There was indication of a very minute trace of sugar. This was so slight that even after standing for hours there was hardly a perceptible precipitate. The slight change in color of the mixture was the only indication of sugar.

The fourth experiment was a repetition of the first. In this there appeared to be no decomposition of the acid. The chemical reaction demonstrated that although sugar was present, yet the quantity was not nearly as great as it would have been, provided the acid had been left out.

In the fifth experiment the acid was added to the starch when cold, and the saliva remained in contact with the prepared starch for nearly two hours before the test was applied. The indications of sugar were only slight.

In the sixth experiment a much larger quantity of acid was boiled with the starch than at any previous time. The saliva remained in contact with the starch mixture for two hours. The indications of sugar were only slight. The test used was a modification of Trommer's. The reactions of the above experiments were compared with similar reactions in which the salicylic acid was omitted.

The second series consisted of but the following experiment. Into the following solution: *R.* Wyeth's saccharated pepsinæ porci, gr. ij, acidî muriatici, gtt. ij, aquæ, 3 ij, five grains of the coagulated white of an egg were placed. At the same time, into a similar amount of a like solution half a grain of salicylic acid and five of coagulated albumen were placed. These were placed in separate vials, subjected to the same conditions, and compared from time to time. At the end of forty-eight hours the albumen in the vial which contained the pepsin solution had disappeared, while that which was in the vial containing the acid weighed two and a half grains, thus having lost just one-half of its weight. This albumen was replaced in the same solution, and at the end of ten days had apparently undergone no change.

After completing these experiments my attention was called to two articles in which mention of the internal use of the acid was made.

In connection with the foregoing experiments, quotations from the articles may not be without interest. In an article on salicylic acid, written by Dr. Boyland, in the Medical and Surgical Reporter, occurs the following: "The acid is now given per os, in doses of ten grains, thrice daily, as an antipyretic in pneumonia, with cold baths containing a portion of the same; also in typhoid fever with the same baths." The Boston Medical and Surgical Journal contains the following information: "Professor Kolbe, to prove the innocuousness of salicylic acid, took, for several consecutive days, half a gramme (seven and a half grains) daily, without the slightest observable unpleasant effect. After an interval of eight days he took, for five consecutive days, one gramme (fifteen and a half grains) daily, and then for two days one and a half grammes (twenty-three grains), in alcohol, each day. The digestion was perfectly normal; no traces of salicylic acid could be found in the urine or fæces. (The test is perchloride of iron, which gives an intense violet color.) At no time was there the slightest discomfort."

"The experiment was repeated by Professor Kolbe and eight of his students, all at the same time. Each took on the first day one gramme, and on the second day one and a quarter grammes of salicylic acid. Not one of them was able to observe the slightest derangement of any organs." In neither of the articles is mention made of the time of administration of the acid; whether near the time of the ingestion of food or not.

Taking all into consideration yet from the foregoing experiments we may draw this conclusion, that it would hardly be proper to administer salicylic acid at or near the time of eating. In some cases it might give rise to severe trouble, particularly in those patients whose power of digestion has been enfeebled.

Dr. Squibb states that, "When applied to wounds, it appears immediately in the urine." This he gleans from Thiersch Pharm. Centrahalle.

Professor Kolbe says, when given internally "no trace of salicylic acid could be found in the urine or fæces." If both statements are correct we may look for different effects according as it is administered. If administered by applying it to an abraded surface, it, by passing through the system unchanged, may destroy septic materials already existing in the blood; while such would not be its effect when given by the mouth, if Professor Kolbe's statement is correct, for it would beyond all probability undergo chemical decomposition by the action of the various digestive fluids on it before it could be absorbed.

I added salicylic acid to the fluid of ascites which was rich in albumen and contained blood globules, pus corpuscles and epithelial scales. The acid at once became white, and after standing for several hours there formed on the surface of the fluid a white coagulum, and the whole of the fluid rendered more gelatinous than a sample of the same fluid which was not treated with the acid. The coagulum was removed and washed. It was then dissolved in liquor potassæ and coagulated by the addition of nitric acid, and again dissolved by the potassa.

The fluid up to the time of treating it with potassa was alkaline.

A portion of acid was added to the albumen of an egg mixed with water. A change was at once observed to take place—the acid becoming white—and in the course of a few hours the whole was pervaded by the coagulum.

From these experiments we may conclude, first: that salicylic acid retards digestion in a marked degree when performed artificially; and second, that it slowly coagulates albumen.

CANCER OF THE STOMACH.

Dr. Etheridge gave the clinical history and treatment of this case, and was assisted by Dr. I. N. Danforth who had made the post mortem examination, and displayed by means of the microscope, to the Society, numerous pathological specimens taken from this case.

The paper has been reserved for publication.

The discussion which ensued called forth, among other facts, the noticeable one that the patient with other members of her family had, thirty years previously, partaken of a broiled chicken which had been kept in a new refrigerator. On the day next following the meal, the entire family was prostrated by acute arsenical poisoning.

From that time forwards the patient had been subject in summer to bilious colic, and had been obliged to refrain from certain articles of food.

Dr. Danforth thought that there had at first been simple inflammation of the pyloric opening of the stomach, and that the tissues inflamed at this point had later in life become invaded by true cancer cells. Epithelial cells, provoked from their regular growth, may become atypical, and so, after years of constant irritation, become malignant; or, epigrammatically, *the lawlessness of growth is the essence of malignancy*, speaking histologically.

QUINIA AND ITS ALKALOIDS.

Mr. Albert E. Ebert, lately the President of the American Pharmaceutical Association, addressed the Society briefly as follows:

There are a number of alkaloids in the Peruvian bark, quinia being the best known and most largely employed. There are besides: 1, quinidia; 2, cinchonidia; and 3, cinchonia. The cinchonia in the red bark is nearly as abundant as quinia.

There has been an immense amount of these "cheaper" alkaloids made while manufacturing quinia, and, there having been no demand for these other alkaloids, they have been stored away, and their cost has been added to that of quinine.

The cheaper alkaloids are said by reputable members of the medical profession to possess the same or nearly the same therapeutical effect as quinine.

The manufacturers have made efforts to introduce these bi-products (the cheaper alkaloids) to the profession and rid their stock of these alkaloids that have accumulated for years while making quinia.

Sweet quinine was then spoken of, and the history of the exposure of the fraud and expulsion of certain parties from the American Pharmaceutical Association.

Cincho-quinine was next referred to.

If the testimonials from physicians in regard to this nostrum are true, then cinchonia sulphate has a large medicinal virtue, for none can be attributed to the quinia it is said to contain.

Mr. Wentzel, of California, a competent and conscientious chemist, has examined this nostrum and found that it contained cinchonia only.

In 1873, Mr. Ebert had himself examined seven different and original samples, microscopically and chemically, and did not find a trace of quinia in them.

In the wholesale market not one of the original packages made before 1874 can be had; they have either been used or bought up.

The samples now sold do not contain the alkaloid quinia but the sulphate salt of quinia, and this only in the *six-tenths* of one per cent.

The success of these alkaloids goes to show that in many respects they are as useful in therapeutics as the quinia sulphate, and as they cost only twenty cents per ounce, are much cheaper.

If extensively used, the price of quinine would be reduced, and the rapid destruction from the forests of these precious trees, would be much lessened.

QUININE BRUTE.

In reply to a question, Mr. Ebert said that the article generally dispensed under the term quinine brute, is chinoidine, or the precipitated extract of cinchona bark, such as is found in the market under the name of "Wetherill's," or "Ellis'" extract of calisaya bark.

The process is published in Parrish's Practical Pharmacy, fourth edition, p. 665.

Trousseau, in his work on Therapeutics, says that quinine brute is a combination of all the cinchona alkaloids in the impure state.

Chinoidine is the residue after the crystallizable principles have been extracted from the mother liquid, evaporated down to a solid extractive consistency. This preparation has the same relation to the crystallizable alkaloids, that molasses has to sugar.

Dr. Etheridge had found that children and others could take quinine agreeably if given in the syrup glycyrrhizæ.

In one instance, a gentleman with intermittent fever, unable to take quinia, was effectually relieved by twenty grain doses of quinine brute.

Dr. Starkweather referred to an article on intermittent fever, by Bouchut, which considered that quinine brute was the most useful remedy to prescribe for children; it is less soluble and bitter, and more easily taken by children. It should be exhibited just after the fever, in the dose of three to six grains daily; this is nearly

double the dose of quinine recommended by Bouchut to be given to children, and he adds, that this should be given by enema.

The Society, after transacting considerable and important routine business, adjourned.

Selections.

ON THE SIMILARITY BETWEEN THE RED BLOOD-CORPUSCLES OF MAN AND THOSE OF CERTAIN OTHER MAMMALS, ESPECIALLY THE DOG ;

CONSIDERED IN CONNECTION WITH THE DIAGNOSIS OF BLOOD-STAINS IN CRIMINAL CASES.

By J. J. WOODWARD, M.D., U. S. ARMY.

In his recent paper "*On the Value of High Powers in the Diagnosis of Blood-stains*,"* Dr. Joseph G. Richardson, of Philadelphia, affirms the possibility of distinguishing the blood of man from that of the pig, ox, red-deer, cat, horse, sheep, and goat, by the measurement of the red blood-corpuscles, even in dried stains, such as the microscopist is called upon to examine in criminal cases.

The circumstance that Dr. Richardson does not mention any animal whose blood-corpuscles cannot be thus distinguished from those of man, and the warmth with which he combats the prudent counsel which Virchow,†

* American Journal of the Medical Sciences, July, 1874, p. 102 ; also the Monthly Microscopical Journal, September, 1874, p. 130. This paper has attracted considerable attention. See, for example, the Lancet, August, 1874, p. 210 ; the Medical Times and Gazette, August 8, 1874, p. 151 ; and the London Medical Record, September 9, 1874, p. 560. The last of these Journals is the only one to raise a warning voice : "Dr. Richardson's paper is interesting, but we are afraid the question often put, 'What is the source of the blood in a stain ?' must go unanswered. In questions where capital punishment hangs on scientific evidence, that evidence must be of no doubtful or questionable nature."

† Rud. Virchow—Ueber die forensische Untersuchung von trockenen Blutflecken—Virchow's Archiv., Bd. xii, (1857), S. 334.

Casper,* and Taylor,† in common with other experts,‡ have offered to enthusiastic microscopists in connection with this subject, led me, on perusing his paper, to fear he would be understood as teaching, in a general way, that it can be determined by the microscope with certainty whether a given stain is composed of human blood or not; and this fear has been justified by some of the notices of his essay which have since appeared in the medical journals.

Now this subject is one which, from time to time, becomes of great importance in criminal cases; and justice, no less than scientific accuracy, demands that the microscopist, when employed as an expert, shall not pretend to a certainty which he does not possess. I suppose no experienced microscopist, who has thoroughly investigated this subject, will be misled by Dr. Richardson's paper, but there are many physicians who possess microscopes, and work with them more or less, to whom a partial statement of facts on such a subject as this is peculiarly dangerous, and the object of the present paper is to point out to this class of readers that Dr. Richardson's statement of the case, even if all he claims be granted as true, is, after all, not the whole truth; that there are certain mammals, among them the dog, the

* J. L. Casper—Handbook of forensic Medicine—translation of New Sydenham Society, London, 1861–5, vol i, p. 138, *et seq.*; also p. 198, *et seq.* See also the new and enlarged German edition of the same by Dr. Carl Liman—Practisches Handbuch der Gerichtlichen Medicin—5 Aufl. Berlin, 1871, Bd. II, S. 173, *et seq.*

† A. S. Taylor—The Principles and Practice of Medical Jurisprudence—2d edit. London, 1873, vol. i, p. 548.

‡ Among others, I may mention E. Brücke—Ueber die gerichtsarztliche Untersuchung von Blutflecken—Wiener Med. Wochenschrift, Jahrgang, 1857, S. 425. Hermann Friedberg—Histologie des Blutes mit besonderer Rücksicht auf die forensische Diagnostik—Berlin, 1852. Andrew Fleming—Blood-Stains—*American Journal of the Medical Sciences*, vol. xxxvii, N. S. (1859), p. 84. Wharton and Stille—Medical Jurisprudence—3d ed., Philadelphia, 1873, vol. ii, p. 696. M. Z. Roussin—Examen Médico-legal des Taches de Sang—*Annales d'Hygiène*, tome xxiii, (1865), p. 139. For an elaborate history of the growth of our knowledge on the subject up to 1860, the reader may consult B. Ritter—Zur Geschichte der Gerichtsarztlichen Ausmittelung der Blutflecken, in Henke's *Zeitschrift für die Staatsarzneikunde*, 1860. Drittes Vierteljahrheft, § 31. The chief authority in favor of the possibility of distinguishing the blood-corpuscles of man from those of other mammalia, is Carl Schmidt—Die Diagnostik Verdachtiger Flecke—Mitau u. Leipzig, 1848. I have not yet obtained a copy of this paper, but find abstracts of it in Schmidt's *Jarbuch* for 1849, p. 258, and Ritter's History, just cited. The reader will also find liberal extracts in Fleming's paper, cited above. The extravagant views of Schmidt are especially confuted by Brücke and Virchow in the papers cited above.

constant companion of man, whose red blood-corpuscles are so nearly identical in size with those of human blood, that they cannot be distinguished with any power of the microscope, even in fresh blood, much less in dried stains; and that, consequently, it is never in the power of the microscopist to affirm truthfully, on the strength of microscopical investigation, that a given stain is positively composed of human blood, and could not have been derived from the blood of any animal but man.

I must do Dr. Richardson the justice to state, at the outset, that these facts are well known to him, although, from motives of prudence, he has thought proper to be silent with regard to them. In a note dated October 19, 1874, in reply to one in which I informed him of my intention to write the present paper, he says: "I should be very much obliged to you if you would add to your remarks (in a foot-note or otherwise), that, in communicating with me, you found me fully aware of the difficulty of making anything more than a differential diagnosis, even in the cases I specified, and of the impossibility of distinguishing the blood of man from that of a monkey or dog, but that I had refrained from giving prominence to these facts," lest an improper use should be made of them in the defense of criminals.

I must, however, entirely dissent from this view of the matter. I cannot forget, that, on more than one occasion in the past, witnesses summoned as scientific experts have been so misguided as to go into courts of justice, and swear positively, on the strength of microscopical examination, that particular stains were human blood;* and I think the danger that others may do so in the future, to the prejudice of innocent men, is more to be feared than the possibility that an acquaintance with the true limits of our knowledge on this subject may sometimes be made use of in the unscrupulous defense of real criminals. I have, therefore, no hesitation whatever as to my duty, in speaking of this subject at all, to speak the whole truth, so far as it is known to me; and in so

* Passing by certain American cases, I may refer, in illustration of this statement, to the celebrated English case, *Reg. v. Thomas Nation* (Taunton Spring Assizes, 1857, p. 279), with regard to which the editor of the *London Medical Journal* has pithily said, that the testimony of the expert must be looked upon "as most disingenuous clap-trap, and rather what we might expect to hear at some popular lecture, where the 'wonders of the microscope' form the theme of declamation to a gaping audience, than the solemn asseveration on oath of a man of science in a court of justice."—*Med. Times and Gaz.*, April, 1857, p. 366.

doing I am happy to say I follow the practice of many of the best writers on medical jurisprudence.

In the instance of the dog, it might at first sight be supposed, from the estimates of the average diameters of the red corpuscles in this animal and in man, as given by Gulliver and Welcker, the authorities most frequently cited in the modern text-books, that a certain small, but constant and measurable difference existed, which might serve as the basis of a distinction in legal cases. This inference, however, is not only contrary to the facts of the case, but an examination of the original essays of the authors cited shows that it is not borne out by their observations.

The mean diameter of the red corpuscles of man, according to Gulliver,* is 1-3200th of an inch ($=.00794$ millimetres), while that of the red corpuscles of the dog is 1-3542d of an inch ($=.00716$ mm.). With regard to his estimate for the human corpuscle, Mr. Gulliver† says: "We are only speaking now of the average size; for they vary like other organisms; so that in a single drop of the same blood you may find corpuscles either a third larger or a third smaller than the mean size, and even still greater extremes." According to this statement, the human red blood-corpuscles may vary in a single drop of blood from 1-4800th of an inch ($=.00529$ mm.) to 1-2400th ($=.01058$ mm.). Mr. Gulliver tells us further, in the same paragraph: "My own estimate of the average size has been deduced from numberless measurements, frequently repeated during the course of several years, of corpuscles quite fresh and swimming in the blood, and in various artificial mixtures, as well as in the dry state." I have not, however, been able to find, in those of his papers which I have examined, any of the numerical data from which this average size was deduced.

* George Gulliver, F.R.S.—Lectures on the Blood of Vertebrata—*Med. Times and Gaz.*, vol. ii, of 1862, p. 101, *et seq.*—On the Red Corpuscles of the Blood of Vertebrata, etc., *Proceedings of the Zoological Society of London*, 1862, p. 91.—The Sydenham Society edition of the works of William Hewson, London, 1846, p. 216, *et seq.*—Appendix to Gerber's Elements of the General and Minute Anatomy of Man and the Mammalia, London, 1842, p. 31, *et seq.*—Observations on the Blood-Corpuscles or Red Disks of the Mammiferous Animals, *London and Edinburgh Philosophical Magazine*, vol. xvi, (1840), pp. 23, 105 and 195; also vol. xvii, pp. 139 and 325; also vol. xxi, (1842), p. 107. For a list of other papers referring to the blood-corpuscles of various animals, see the Works of William Hewson above cited, note to page 236.

† *Med. Times and Gaz.*, vol. ii, of 1842, p. 157.

In the table of measurements appended to Gerber's Elements, in which for the first time he gave "mean or average sizes" (in previous papers he had only recorded "common sizes," occasionally supplementing these by the extremes observed), Mr. Gulliver explained his method of arriving at the average size as follows: "The common sized corpuscles are first set down, then those of small and large size, and lastly, the average deduced from a computation of the whole."* In this table the measurements for the common dog are given as follows:—†

Common sizes,	1-4000 of an inch.
	1-3500 " "
	1-3200 " "
Small size,	1-4570 " "
Large size,	1-2900 " "
Average,	1-3542 " "

Where the "average" is simply the arithmetical mean of the several fractions given above, it can hardly, I think, be accepted as the true average size, since as much weight is given in this mode of calculating to the rarer as to the more frequent forms. Accordingly it is not surprising that we find in a former paper‡ measurements which do not accord very closely with this average: "Domestic dog, old mongrel, common diameter of corpuscles 1-4000th to 1-3200th of an inch." "Fox hound puppy, one day old, a bitch, 1-3000th, and 1-2666th, the most common diameter of the corpuscles." "Fox hound puppy, twelve days old, a bitch: most common diameter of the corpuscles 1-3000th and 1-2885th of an inch. Extreme sizes 1-4000th and 1-2666th." "Mongrel puppy, four months old, a bitch, all the following diameters common, viz.: 1-3693d, 1-3554th, 1-3429th, and 1-3200th." The measurements for the second and third of these animals are about as much larger than those for the human species as the others are smaller.

It is interesting to know just how Mr. Gulliver's measurements were made. He tells us he used a glass eyepiece micrometer so adjusted that the divisions had a value of 1-4000th of an inch each. "If one space and a quarter of this micrometer were occupied by a single globule, this would of course measure 1-3200 of an inch ;

* Appendix to Gerber's Elements, cited above, p. 1.

† Loc. cit., p. 38.

‡ London and Edinburgh Philosophical Magazine, vol. xvi. (1840), p. 28.

if three equally-sized particles lying in a line, and touching at their edges, covered three spaces and a half, the diameter of each of these would be 1-3429th, if four spaces 1-3000th of an inch."* The objectives used were an eighth by Ross, and a tenth by Powell.† It is not stated whether these objectives were provided with the screw-collar adjustment for thickness of cover, but they probably were; and if so, doubtless all the measurements were somewhat vitiated, like others of the same date, by failure to allow for the variation in magnifying power produced by turning the screw-collar. Moreover, it must be clear, that practically the fractions of a division of the eye-piece micrometer were only *estimated*, for the case in which a number of "equally-sized" corpuscles would be found "lying in a line," and just "touching at their edges," without overlapping, must have been rare. As to the accuracy of the value assigned to the eye-piece micrometer, Mr. Gulliver himself says: "In the absolute accuracy of any micrometer applied to objects so extremely minute, it is difficult to place implicit confidence;" and he only claims "relative exactness" for his results.‡

Turning now to the original essay of Welcker, we find that his observations give even less support than those of Gulliver to the notion that the blood of the dog can be distinguished from that of man by the microscope. Welcker's measurements, as ordinarily quoted in the text-books, are .00774 of a millimetre for man, and .0073 for the dog. I find, in his original paper,§ that the mean for the dog was derived from the measurement of but ten corpuscles in the blood of a single terrier; the variations in this case being, minimum, .0065 mm., maximum, .0082 mm. Now, if we turn to the table|| of his own measurements of human blood, we find, that, in the last measurement of the blood of Dr. Schweigger-Seidel, fifty corpuscles gave the following results: mean, .00724 mm., minimum, .0051, maximum, .0085, in which case the mean is a trifle less than that found for the dog.

I would commend this table of Welcker to the study of those who may be disposed to underrate the diversity of size which may be observed among the human red

* Loc. cit., p. 24. † Loc. cit., p. 24 and p. 105. ‡ Loc. cit., p. 24.

§ H. Welcker—Grosse, Zahl, Volum, Oberfläche und Farbe der Blutkörperchen, bei Menschen und bei Thieren. Zeitschrift für Rationelle Medicin, 3te R., Bd. xx, (1863), S. 257.

|| Loc. cit., p. 263.

corpuscles; the minimum measurement recorded in it is .0045 mm., the maximum .0097 mm.; the author remarks: "I have always, both in animals and in man, found the transverse diameter of the blood-corpuscles of one and the same individual vary from one-fourth to one-half of the mean measurement; and it appears that all the sizes lying between the two extremes are present in tolerably equal numbers, with the exception of the smallest corpuscles, which occur for the most part singly and at intervals."

I may mention, further, that the mean dimensions of the human red corpuscles so often quoted from Welcker, viz., .00774 mm., with a minimum of .0064 mm., and a maximum of .0086, were not derived from the whole of this table, but from four sets of measurements of his own blood only, of which two were dry preparations and two from the moist blood. He tells us that he selected the mean .00774 mm. because it *was* derived from his own blood, which he had used in a previous research on the number of the blood-corpuscles, and thought best, therefore, to use also in the computation of their volume, which is one of the chief subjects discussed in his paper. The mean of eight other measurements from five different individuals was .00768 mm. The blood of a chlorotic woman gave .00656 mm., as the mean of the corpuscles examined moist, and .00693 mm., as their mean when examined dry.

Welcker made his measurements with Kellner's System III, Ocular II, magnifying about 620 diameters, and by a delicately ruled eye-piece micrometer, each division of which, with the power used, had a value of .001723 mm., as determined by the stage micrometer: "A human blood-corpuscle fell within four or five of these divisions, while, on account of the great delicacy of the ruling, fifths or even tenths of a division could be estimated with tolerable exactness." The stage micrometer was a millimetre in one hundred parts, ruled by Lerebours, and which Welcker had verified by comparison with a standard scale in a manner which he describes in full, and which is worthy of study. He measured, as a rule, fifty blood-corpuscles from each sample, and these were not selected, but taken indiscriminately one after the other as they came under the scale while the specimen was being moved along.

Other observers besides Gulliver and Welcker have recorded minute differences in the average size of the red

corpuscles of man and the dog. Thus Carl Schmidt* estimates the average diameter for man at .0077 mm., for the dog at .0070 mm. A. Kolliker† fixes the mean for man at .0033 of a Paris line (= .00751 mm.)—that for the dog at .0031 of a Paris line (= .00709 mm). On the other hand, Friedberg‡ makes the blood-corpuscles of the dog the largest, stating that he finds the human corpuscles measure from .0058 to .0070 mm.—those of the dog from .0054 to .0080.

For myself, after repeated measurements of the blood of the dog, and of human blood, I can only say that I find no constant difference between them, whether the fresh blood or thin layers dried on glass be selected for measurement. The mean of fifty corpuscles taken at hazard is seldom twice the same, and sometimes that of human blood, sometimes that of dog's blood, is a trifle the largest.

The following measurements, intended to illustrate these facts, were made with a glass eye-piece micrometer ruled in two-hundred-and-fiftieths of an inch, and with such a magnifying power that each division corresponded to 1-50,000th part of an inch (.0005079 + mm.). The objectives used were an immersion 1-16th of Powell and Lealand, and an immersion No. 13 of Hartnack, either of which permitted the above value to be given to the divisions of the eye-piece micrometer by properly adjusting the draw-tube. The stage micrometer used in effecting this adjustment is an excellent one in 1-100ths and 1-1000ths of an English inch, in which the several hundredths and thousandths, as nearly as I can measure, are equal to each other, and the ten divisions of the latter value to any one division of the former—a quality in which the stage micrometers in the market are generally deficient. I have compared this micrometer with a standard scale ruled on silver—a centimetre in millimetres and tenths—the property of the United States Coast Survey, kindly loaned for this purpose by Mr. J. E. Hilgard, who assures me that it is “very accurate.” I made several comparisons, both by means of an eye-piece micrometer and by the contact method described by Welcker. These comparisons showed that the divisions of my stage micrometer were nearly two per cent. (exactly 1.945 per cent.) larger than they ought to be, and this correction

* Op. cit.

† A Manual of Human Microscopic Anatomy. London, 1860, pp. 519 and 525.

‡ Op. cit.

was accordingly applied in adjusting the value of the eye-piece micrometer. The value assigned to the divisions of the eye-piece micrometer for these measurements cannot therefore, I think, differ from their absolute value by a quantity large enough to modify the results appreciably.

As the divisions represent a value twelve and a-half times less than that of the divisions of Mr. Gulliver's eye-piece micrometer, and more than three times less than those of Welcker's eye-piece micrometer, I did not find it necessary to estimate fractions of a division, as they did, but read the nearest number of whole divisions corresponding to each corpuscle. Fifty corpuscles, or about that number, were measured in each sample of blood. An assistant noted the number of eye-piece divisions corresponding to each corpuscle, as the measurements were made, and the mean was obtained in each case by adding together all the values and dividing by the number of corpuscles measured. Of course, the number of eye-piece divisions found only required to be multiplied by two to convert it into decimals of an inch. I endeavored at first to make these measurements with a dry Powell and Lealand's 1-50th of an inch, with the draw-tube so adjusted that each division of the eye-piece micrometer should equal one-hundred-thousandth of an inch, but I found the outline of the corpuscles, with this power, was not sharp enough to permit me to measure them as exactly as I wished, and I therefore gave the preference to the immersion objectives above mentioned.

Of course, in arranging for these measurements the effect of the screw-collar adjustment of the objective on the magnifying power had to be taken into account. This was done in the following manner: Some thin glass covers, not varying more than a thousandth of an inch from .012 of an inch in thickness, were selected from a lot of so-called 1-200ths of an inch covers by means of a suitable lever of contact.* Some blood being placed under one of these covers, the best adjustment of the screw collar for definition was found by trial. The stage micrometer, which is an uncovered one, was then temporarily covered with another of the selected thin glasses, and, being duly focussed upon, the desired value

* The instrument used was made by Stackpole & Bro., of New York, after the pattern of the instrument designed by Mr. Ross, which is figured in Carpenter on the Microscope, 4th ed., London, 1868, p. 203.

was given to the divisions of the eye-piece micrometer by the adjustment of the draw-tube, after which the measurements were proceeded with, and the screw-collar was not turned again until they were completed.

The following tables present the several means deduced from these measurements, in decimals of an inch, to which, for convenience, I have added the equivalent values in decimals of a millimetre. The number of corpuscles from which each mean was deduced is also given. The measurements made with the Hartnack No. 13 immersion are marked (H.), the others were made with Powell and Lealand's immersion 1-16th.

Measurements of Human Red Blood-Corpuscles, from Five Individuals.

			MEAN DIAMETER.	
	Number of corpuscles measured.		Decimals of an English inch.	Decimals of a millimetre.
1. Dr. W., dry . . .	50		.000304	.00772
2. " " moist . . .	49		.000292	.00742
3. " " " (H.) . . .	50		.000300	.00763
4. " " " (H.) . . .	50		.000289	.00734
5. " McC., dry . . .	50		.000288	.00731
6. " " " . . .	50		.000294	.00747
7. " " moist . . .	50		.000301	.00765
8. Mr. W., dry . . .	50		.000298	.00757
9. " " " (H.) . . .	52		.000297	.00754
10. " T., " . . .	50		.000290	.00737
11. " " " (H.) . . .	50		.000292	.00743
12. " B., " . . .	50		.000296	.00752
13. " " " (H.) . . .	50		.000297	.00754

In each of these measurements of human blood, the great majority of the corpuscles ranged from twelve to seventeen divisions of the eye-piece micrometer—that is, from .00024 to .00034 of an inch. Out of the whole number measured, six were as small as ten divisions, and one as large as eighteen divisions; large and small forms were not searched for, however. The size most frequently measured was fifteen divisions, or .00030 of an inch.

Measurements of the Red Corpuscles of the Dog, from Five Individuals.

			MEAN DIAMETER.	
	Number of corpuscles measured.		Decimals of an English inch.	Decimals of a millimetre.
1. Mongrel terrier, dry . . .	50		.000292	.00742
2. Same animal, " . . .	54		.000299	.00759
3. Another mongrel terrier, dry (H.)	50		.000290	.00737
4. Same animal, moist (H.) . . .	50		.000288	.00731
5. Scotch terrier, " (H.) . . .	50		.000291	.00739
6. Same animal, " (H.) . . .	50		.000289	.00734
7. " " " (H.) . . .	49		.000287	.00729
8. Spitz dog, dry (H.) . . .	52		.000285	.00724
9. Black and tan, moist (H.) . . .	50		.000290	.00737

In each of these measurements of dog's blood, precisely as in the case of those of human blood, the great majority of the corpuscles measured from twelve to seventeen divisions of the eye-piece micrometer (.00024 to .00034 of an inch). Out of the whole number measured, four were as small as ten divisions, but none larger than seventeen were encountered. As with the human blood, however, large and small forms were not searched for, but all the perfectly formed corpuscles brought into view by the movement of the stage were measured as they passed under the micrometer, without selection, until the required number was recorded. The size most frequently measured was fifteen divisions, or .00030 of an inch, precisely as in the case of human blood.

It will be observed that three of the above means for human blood, Nos. 1, 3 and 7, are a trifle larger than any of those of dog's blood, and two of the latter, Nos. 7 and 8, are a trifle smaller than any of those for human blood. All the other means for the dog are within the range of the values found for human blood, and the majority of them are each identical, even to the last decimal place, with some one of those found for man.

I may, moreover, remind the reader in this place, that the variations between the mean diameter assigned to human blood by different observers are quite as great as the variations recorded by any of them between the blood of man and the dog, or even greater. Passing by the older measurements, some of which, as a matter of curiosity, I have given in the foot-note,* I may cite, besides the measurements of Gulliver, .00794 mm., Welcker, .00744 mm., and Kolliker .00751 mm., which have been already quoted in this paper, the following values: Robin,† .0073

* A list of the more important of these older measurements will be found in the *Mensiones Micrometricæ* of R. Wagner (*Partium elementarium organorum quæ sunt in homine atque animalibus mensiones micrometricæ*. Erlangen, 1834). Most of these are included in the more complete list given by Louis Mandl (*Mémoire sur les parties Microscopiques du Sang*, Paris, 1838, p. 10), from which I take the following, reducing the values which both Mandl and Wagner give in vulgar fractions of a Paris line to decimals of a millimetre. Leeuwenhoek (1673), .00902; *ib.* (1720), .01327; Jurin (1717), .00789; Tabor (1724), .00723; Senac (1749), .00820; Muys (1751), .01128; Weiss (1760), .01085; Della Torre (1763), .00801; Blumenbach (1789), .00789; Villar (1804), .00564; Sprengel (1810), .00902; Kater (1819), .00677; Bauer and Home (1818), .01504; Young (1819), .00451; Rudolphi (1821), .00902; Prevost and Dumas (1821), .00705; Edwards (1826), .00814; Hodgkin (1827), .00902; Wollaston, (1827), .00525; Weber (1830), .00525; Muller (1834), .00525 to .00902; Schultz (1836), .00667 to .00836; Wagner (1838), .00645 to .00752—Mandl, himself, gives .00800.

† Charles Robin. Note sur quelques points de l'anatomie et de la physiologie des globules rouge du sang. *Journal de la physiologie*, tom. i, (1858), p. 283.

mm., Harting, .0074 mm., Valentin,* .0071 mm., and Austin Flint, Jr.,† .00726 mm. (1-3500th inch).

I have thus shown that we are not justified, either by the facts of the case, or by the authorities supposed to favor the possibility of doing so, in attempting to distinguish between the blood of man and that of the dog, by the measurement of their red corpuscles. Mr. Gulliver himself, indeed, appears to have come to a similar conclusion, not only with regard to the dog, but several other animals, for he tells us that the corpuscles of the quadrumana "differ but little from that of man, being only just appreciably, or sometimes not at all, smaller, both in the monkeys of the old and new continents," and that "in the seals, otters, and dogs, the corpuscles are about as large as in man."[‡]

I myself have not made systematic measurements of the blood of any of these other animals, and am, therefore, unable to speak as authoritatively with regard to them as I can about the dog. From Mr. Gulliver's detailed measurements, appended to Gerber's Elements, however, I am led to believe that there are several other animals whose blood, even in the fresh state, could not be distinguished by the dimensions of the red corpuscles from that of man. Among the domestic animals I may especially mention the rabbit and the Guinea-pig as belonging to this category. To these, besides most of the monkeys of both the old and new world, the seals, and the otters, we may add the kangaroo, the capybara, the wombat, and the porpoise. In the case of all these animals we not merely find that the "average size" calculated in Mr. Gulliver's peculiar way approximates dangerously to the average assigned to man, but the classic 1-3200th of an inch figures among the "common sizes" recorded by Mr. Gulliver for each.

The foregoing remarks and measurements refer especially to the fresh blood of the animals mentioned, and to thin layers quickly dried on glass, as is generally practiced in making preparations of blood for permanent preservation. In such preparations the corpuscles have almost exactly the size they possess in the perfectly fresh blood. The great majority of Mr. Gulliver's measurements were made upon blood prepared by this method,

* I cite the estimates of Harting and Valentin from Welcker's paper cited above, p. 258.

† The Physiology of Man, vol. i, New York (1866), p. 111.

‡ Proc. of the Zoolog. Soc., 1862, p. 96.

and at the time he appears to have regarded the results as the equivalent of measurements made on perfectly fresh blood. "In some instances," he tells us, "there was certainly a slight enlargement in the dried corpuscles, as compared with those seen in their own serum immediately after they were taken from the animal. In the greater number of trials, however, the sizes of the wet and dry discs corresponded accurately."* Twenty years later he seems to have modified this opinion somewhat, for he states, that, when the corpuscles of man and other mammalia were dried on glass, however quickly, they were usually just appreciably larger than in the "liquor sanguinis."† Welcker also found that the mean dimension obtained by measuring the corpuscles dried in a thin layer was apt to be rather greater than that obtained from the measurement of moist blood, and explained it by stating that "the very smallest more spherical corpuscles spread out a little in drying." He regards the difference, however, as so trifling that he uses measurements of dried specimens indiscriminately with those of moist in obtaining his averages. I myself am not satisfied that there is any constant difference, and find, on comparing the mean diameter of fifty corpuscles dry with fifty moist from the same individual, that sometimes the one, sometimes the other, is a trifle the largest. The dried corpuscles are very apt to be deformed, and often many of them are quite oval. If the long diameters of a number of such corpuscles are measured, the mean will be of course too great. I do not find it so if the measurement is confined, as it should be, to those corpuscles which have dried symmetrically and are quite circular.

How is it now with regard to blood dried *en masse*, when sprinkled upon weapons, clothing, wood, etc. Dr. Richardson admits in this case that a *slight* contraction takes place, but evidently regards it as too trifling to interfere with the diagnosis. Carl Schmidt, on the other hand, found that the blood-corpuscles under such circumstances contracted to nearly one-half their original size, and gives .0040 mm. as the mean diameter of the corpuscles of human blood thus prepared, while he assigns .0077 mm. as the mean of human corpuscles dried in thin layers

* Lond. and Edin. Philosophical Mag., vol. xvi, (1840), p. 25.

† Med. Times and Gazette, Aug., 1862, p. 158.

on glass.* It is not necessary for the purposes of the present paper to go into a detailed discussion of this question, for no one will pretend that it can be any easier to make the diagnosis of such stains than it is in the case of moist blood or of thin films dried on glass; and, if it is impossible in the latter case to ascertain by the microscope that the sample submitted is human blood, it would be absurd to hope to do better in the former. I cannot, however, refrain from expressing my conviction that Carl Schmidt was quite as accurate in measuring his samples as Dr. Richardson in measuring his, and that the latter has underrated the variations in size which the dried corpuscles may present under various conditions.

I may also call attention in this connection to the effect of water on the diameter of the corpuscles. Mr. Gulliver has pointed out, that, if "water be mixed with blood, the discs immediately become much enlarged and spherical, quickly losing their coloring matter; and yet, if the whole of this be thus removed, after a while the outlines of the discs, very faint indeed, may frequently be recognized, diminished considerably in diameter and apparently quite flat."† In another place he relates, that "some human corpuscles having an average diameter of $1\frac{3429}{100000}$ th of an inch, measured only $1\frac{4800}{100000}$ th of an inch after the whole of their coloring matter had been separated in this manner."‡ Suppose, now, the case of blood mixed with water and afterwards dried, as, for example, in the case of an unsuccessful attempt to wash away the blood while fresh?

In conclusion, then, if the microscopist, summoned as a scientific expert to examine a suspected blood stain, should succeed in soaking out the corpuscles in such a way as to enable him to recognize them to be circular discs, and to measure them, and should he then find their diameter comes within the limits possible for human blood, his duty, in the present state of our knowledge, is clear. He must, of course, in his evidence, present the facts as actually observed, but it is not justifiable for him to stop here. He has no right to conclude his testimony without making it clearly understood, by both judge and jury, that blood from the dog and several other animals would give stains possessing the same properties, and that neither by the microscope, nor by any other

* I quote from Fleming, *op. cit.*, p. 111.

† *Lond. and Edin. Phil. Mag.*, vol. xvi, (1840), p. 106.

‡ *Ib.*, vol. xxi, (1842), p. 108.

means yet known to science, can the expert determine that a given stain is composed of human blood, and could not have been derived from any other source. This course is imperatively demanded of him by common honesty, without which scientific experts may become more dangerous to society than the very criminals they are called upon to convict.—*Am. Jour. Med. Sci.*, Jan., 1875.

EXPLANATORY NOTE IN REGARD TO THE DIAGNOSIS OF BLOOD STAINS.

By JOS. G. RICHARDSON, M.D.,

Microscopist to the Pennsylvania Hospital.

In an article by Dr. J. J. Woodward, in the last issue of this Journal, elicited by my paper on Blood Stains, published in the No. for July, 1874, it is stated that we can never "affirm truthfully on the strength of microscopical investigation that a given stain is positively composed of human blood." With this statement I fully agree, maintaining, however, that, whilst it is literally true, it is not the whole truth, because it often happens in practice, that *evidence other than microscopical*, narrows down the conditions of a case to the question: Is this stain human blood or that of an ox, pig, or sheep? The microscopist can then, in such cases, from fair specimens of blood spots, as ordinarily produced, affirm truthfully that "a given stain is positively composed of human blood," should it really be so, and this if doubted I can conclusively prove.

In respect to the *just* prominence which should be given to the circumstance that "the blood corpuscles of a few mammals approach so nearly in size to those of man as to render their distinction doubtful," a fact which I thus mention in my essay in this Journal for July, 1869, of which the paper of July, 1874, is a continuation (see also *Handbook of Med. Micros.*, p. 288), I think Dr. Woodward undervalues, in the first place, the prudence of our many medical brethren who possess microscopes without considering themselves experts; and, second, that he has overlooked in the calculation (which we both, perhaps equally, sought to make, of how to secure for humanity, by our researches, the greatest benefit with the least injury)

one important factor, viz., the shrewd-witted lawyer, to be found in every country town, who would infallibly see that not one syllable of the carefully worded statements in my paper supported any unqualified microscopist's claim to distinguish human from dog's or monkey's blood. Hence, trusting to this powerful element for the protection of the two or three innocent persons who might otherwise be endangered, I felt (honestly if mistakenly), whilst writing both my first paper and its continuation, that, should I more than indicate the animals which render our conclusions doubtful, my work might be utterly condemned as prejudicial to the interests of society, and myself perhaps compared (should I emphasize and reiterate the fact that science alone could not detect the falsehood of a criminal's story if he cunningly asserted that suspicious stains were made by the blood of a dog) to a toxicologist publishing a treatise, setting forth most faithfully the method by which poisoners may best destroy their victims with the least danger of detection in their crimes.* Be it remembered also, that in all cases a really innocent person, wrongly accused of murder, on the ground of blood stains upon his clothing, etc., actually produced from that "constant" (yet rarely slaughtered) "companion of man," the dog, or from a seal, or otter, needs no microscopist to prompt him into telling (and trying to confirm), *when first arrested*, the *true* origin of the suspicious blood spots.

These various considerations led me to publish my results in a guarded manner, but, now that all responsibility for harm has been removed, I am glad for the sake of the *few* who might draw erroneous inferences from my former papers, to say most emphatically, that I believe we cannot at present distinguish positively, in dried stains, between the blood corpuscles of man, and those of any mammal in which the disks measure on an average over $\frac{1}{4000}$ of an inch. Hence, therefore, until further discoveries are made, a microscopist's best efforts at revealing crime can only serve the cause of right and justice in those cases where the criminal's attorneys, in spite of being *forewarned* and consequently *forearmed*, fail to

* The gendarmerie of Valenciennes have just arrested a Dutchman whose profession is, to say the least of it, extraordinary. He is a dealer in all sorts of instruments employed by burglars and thieves. When arrested he had in his possession a large stock of pamphlets giving the fullest directions as to the best plan for waylaying people on the high roads, and also how to kill them without any noise in case of resistance.

prepare or suborn testimony skillfully enough to convince the jury that some dog, rabbit, elephant, monkey, etc., has been killed, in such a way as to produce blood stains which are likely to be confounded with those of the murdered victim. That I was induced to avoid specifically stating this failure of our science by no unfounded apprehension of evil results, is *proved* by the fact that after my evidence was delivered in the Larabee trial at Franklin, Pa., the prisoner's counsel, a "shrewd-witted lawyer," in order to account for spots on the defendant's boots, brought two women into court who testified that the boots were sprinkled as they stood in a corner of the kitchen, by a puppy which jumped away from them just as they got one ear cut, and ran round the room shaking its bleeding head. Further to substantiate this tale, a dog with one ear clipped was shown to the jury, and sworn to as the very one from which the blood was shed. Fortunately, however, it so happened that I had examined two spots on the prisoner's pantaloons, finding them to be human blood, in contradistinction to pheasant's blood, as he first explained them to be, and since the contrivers of this dog story apparently forgot that the pantaloons were not standing up in the boots, to be sprinkled with them, their ingenious theory failed to gain credence with the jurors, who brought in a verdict of guilty. I venture, however, to predict that from this explanatory note, *and* the essay which made it necessary, will spring a host of bloody dog tales to account for suspicious stains on the clothing, etc., of murderers, until even attorneys for the defense become themselves ashamed to put forward this thin, worn-out plea.

In regard to the supposed greater accuracy of Carl Schmidt's observation, that dried and remoistened blood corpuscles shrink nearly one-half, I desire to add that I think it is chiefly accurate concerning specimens of *crenated* corpuscles, such as form when considerable quantities of blood undergo desiccation, and will be pleased at any time to demonstrate the general correctness of my measurements of the disks in the thin films of true *blood stains* (as emphatically distinguished from *masses* of dried blood).—*Am. Jour. Med. Sci.*, April, 1875.

Editors' Book Table.

[NOTE. — All works reviewed in the pages of the CHICAGO MEDICAL JOURNAL may be found in the extensive stock of W. B. KEEN, COOKE & Co., whose catalogue of Medical Books will be sent to any address upon request.]

DENTAL PATHOLOGY AND SURGERY. By *S. James A. Salter, M.B., F.R.S.*, Member of the Royal College of Surgeons, Examiner in Dental Surgery at the College, Dental Surgeon to Guy's Hospital. New York : William Wood & Co., Publishers. 1875.

The author of this work will be recognized by surgeons as likewise author of the article on "Surgical Diseases of the Teeth," in Holmes' System of Surgery. Having had the advantage of a previous medical education, and some years subsequent practice as surgeon, he comes to his task as an instructor in the department of dental surgery better prepared than the majority of his predecessors who have enriched the literature of this specialty. The chapters upon the anatomy—normal and morbid—of the teeth are unusually full and explicit. Not only the special forms of these organs, and the deformities and irregularities to which they are liable, are elaborated carefully, but their general anatomy, together with that of their accessory structures, are carefully considered.

The subject of the pathology of the teeth is treated comprehensively and in full detail, and in the chapters devoted to the special subject of the nervous relations of the dental apparatus, a wide, and hitherto almost unexplored, field of investigation is opened up to the student. The portion of the work devoted to the subject of the mechanical appliances for the treatment of deformities, displays sound judgment and thorough appreciation of the necessities of each case. We know no better book upon the subject than this volume, and doubt if one so good is within the reach of the American student. H.

ESSENTIALS OF THE PRINCIPLES AND PRACTICE OF MEDICINE. A Handbook for Students and Practitioners. By *Henry Hartshorne, A.M., M.D.*, Professor of Hygiene in the University of Pennsylvania, etc., etc. Fourth Edition. Thoroughly Revised, with One Hundred Illustrations. Philadelphia: Henry C. Lea. 1874.

That three editions of a work should have been already exhausted, and the issue of a fourth demanded in a comparatively short time, is a criticism sufficiently favorable to satisfy the self-love of any author. Nor will we attempt to detract from its force by any unfavorable comments upon one of the best books of its kind extant. Upon general principles, we cannot accord a hearty approval to compendiums as a class, believing that, while they will subserve for some their legitimate purpose, for the majority they will be made pretexts for sciolism. The work is divided into two parts, the first containing four sections, the first of which comprises an excellent summary of general pathology as presented in the morbid states of the system at large and of special organs, concluding with a brief statement of the different modes of death. The second section, upon semeiology, includes symptomatology, physical diagnosis, with descriptions of the operative procedures and apparatus for laryngoscopy, diagnosis of diseases of women, ophthalmoscopy, sphygmography, thermometry, and pneumatic aspiration, with directions for conducting post-mortem examinations and medico-legal investigations in cases of suspected poisoning. In regard to the mode of conducting post-mortem examinations of the spinal cord, we will venture to suggest an improvement upon the "chisel and mallet or saw," for facilitating section of the vertebral arches—a pair of strong cutting pliers, the blades bent at an obtuse angle to the handle. In section third, upon "general therapeutics," we are sorry to see the author holding on with such tenacity to the use of "blood-letting in the treatment of violent inflammations and congestions." This seems like turning the wheels of progress backwards. Part second, upon "special path-

ology and practice," constitutes nearly three-fourths of the bulk of the volume, to which we must object, as being entirely too extensive to be sufficiently comprehensive.

H.

BOOKS RECEIVED.

TRANSACTIONS OF THE TWENTY-FOURTH ANNIVERSARY MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY—Held in the City of Chicago, May 19, 20, 21, 1874.

PAMPHLETS RECEIVED.

ON CERTAIN MORBID ALTERATIONS OF MUCOUS MEMBRANE : Their Influence on Speech and Their Apparent Relations with Diseased Nerve Structure. By *Beverly Robinson, M.D.*, Surgeon to the Manhattan Eye and Ear Hospital, Department of the Throat. Formerly Resident Physician to the Paris Hospitals, etc., etc. Reprinted from the New York Medical Journal, March, 1875. New York : D. Appleton & Co. 1875.

THE NASAL DOUCHE : What it Accomplishes, and What it Does Not. By *Beverly Robinson, M.D.*

THE FOURTEENTH ANNUAL REPORT of the Trustees, Superintendent and Treasurer of the Illinois State Hospital for the Insane, Jacksonville. 1874.

VALEDICTORY ADDRESS to the Medical Graduates of the University of Louisville, March 1, 1875. By *D. W. Yandell*, Professor of the Science and Art of Surgery and Clinical Surgery.

FIFTH REPORT of the New York Ophthalmic and Aural Institute, for the Twenty Months beginning May 1, 1873, and ending December 31, 1875.

CLINICAL STUDIES, with Large Emetic Doses of Ipecacuanha. Reprinted from the Atlanta Medical and Surgical Journal.

ON THE HOMOEOPATHICITY OF ELECTRICITY : Where Indicated, and where Electricity may be Potentized. By *R. N. Tooker, A.M., M.D.*, Chicago. 1875.

A CASE OF REFLEX NEURALGIA, Associated with Urethral Contractions, and a Rare Form of Urinary Sinus, with a Description of the Cold Water Coil. By *Fessenden N. Otis*, Clinical Professor of Genito-Urinary Diseases, College of Physicians and Surgeons, New York. Reprinted from the New York Medical Journal, Feb., 1875.

CHOLERA AND PLANETARY EPIDEMICS. By *Richard Mansell*, Rock Island, Ill. 1875.

JOURNALS RECEIVED.

- L'Anatomie et de la Physiologie, etc., Journal de—Charles Robin. Paris. No. 2.
- The American Medical Weekly—Vol. ii, Nos. 14, 15, 16.
- The American Practitioner—Vol. xl, No. 64.
- The American Journal of the Medical Sciences—No. cxxxviii.
- The Atlanta Medical and Surgical Journal—Vol. xiii, No. 1.
- The American Journal of Insanity—Vol. xxxi, No. 4.
- The Clinic—Vol. viii, Nos. 13, 14, 15, 16.
- The Cincinnati Lancet and Observer—Vol. xviii, No. 4.
- The Detroit Review of Medicine and Pharmacy—Vol. x, No. 4.
- The Dental Cosmos—Vol. xvii, No. 4.
- The Eclectic Medical Journal—Vol. xxxv, No. 4.
- La Gazette Medicale de Paris—Tome iv, No. 10.
- The Indiana Journal of Medicine—Vol. v, No. 12.
- The Kansas City Medical Journal—Vol. v, No. 2.
- The London Lancet, March, 1875.
- The Laboratory, Boston—Vol. i, No. 9.
- The Medical Register and Advertiser—Vol. i, No. 1.
- The Medical & Surgical Reporter—Vol. xxxii, Nos. 13, 14, 15, 16.
- The Medical Record—Vol. x, Nos. 13, 14, 15, 16.
- The Medical Times (Philad.)—Vol. v, Nos. 178, 179, 180, 181.
- The Medical News and Library—No. 388.
- The Monthly Abstract of Medical Science—Vol. ii, No. 4.
- The Medical Examiner—Vol. xvi, No. 7.
- The Medical Herald, Leavenworth—Vol. viii, No. 10.
- The Nashville Journal of Medicine and Surgery—Vol. xv, No. 4.
- The New York Medical Journal—Vol. xxi, No. 4.
- The New Remedies—Vol. iv, No. 2.
- The Practitioner, London—No. lxxxii.
- The Pharmacist, Chicago—Vol. viii, No. 4.
- The Pharmacal Gazette—Vol. iii, Nos. 64, 65.
- The Peninsular Journal—Vol. ii, No. 4.
- El Repertorio Jalisciense—No. 9, Tomo i.
- The Richmond and Louisville Medical and Surgical Journal—Vol. xix, No. 4.
- The St. Louis Clinical Record—Vol. ii, No. 1.
- The St. Louis Medical and Surgical Journal—Vol. xii, No. 8.
- The Southern Medical Record—Vol. v, No. 2.
- The United States Medical Investigator—Vol. i, No. 7.
- The Virginia Medical Monthly—Vol. ii, No. 1.

Illinois State Medical Society.

The Twenty-fifth Annual Session will be held in the city of Jacksonville, on the third Tuesday in May (18th), 1875, at 9 o'clock, A. M. The following Committees are expected to report :

Committee on Practical Medicine — E. P. Cook, M.D., Mendota, *Chairman*.

Committee on Surgery — Edwin Powell, M.D., Chicago, *Chairman*.

Committee on Obstetrics — Hiram Nance, M.D., Kewanee, *Chairman*.

Committee on Drugs and Medicines — Wm. E. Quine, M.D., Chicago, *Chairman*.

Committee on Necrology — E. Ingals, M.D., Chicago, *Chairman*.

Committee on Ophthalmology — E. L. Holmes, M.D., Chicago, *Chairman*.

Committee on Otology — S. J. Jones, M.D., Chicago, *Chairman*.

SPECIAL COMMITTEES.

Committee on Diseases of Children — J. O. Hamilton, M.D., Jerseyville, *Chairman*.

Committee on Diseases of Respiratory Organs — H. A. Johnson, M.D., Chicago, *Chairman*.

Committee on Galvano-Therapeutics — David Prince, M.D., Jacksonville, *Chairman*.

Committee on Diseases of Women — J. T. Pearman, M.D., Champaign, *Chairman*.

Committee on Diseases of the Nervous System — J. S. Whitmire, M.D., Metamora, *Chairman*.

Committee on Medical Jurisprudence — R. J. Patterson, M.D., Batavia, *Chairman*.

Committee on Dermatology — Chas. G. Smith, M.D., Chicago, *Chairman*.

Committee on Public Address — J. H. Hollister, M.D., Chicago, *Ch'n*.

Each local Society shall have the privilege of sending to the Society one delegate for every five of its regular resident members, and one for every additional fraction of more than half of this number. The faculty of every regularly constituted medical college or chartered school of medicine, shall have the privilege of sending two delegates. The professional staff of every chartered or municipal hospital, and every other permanently organized medical institution of good standing, shall have the privilege of sending one delegate.

The Members by Invitation shall consist of practitioners of reputable standing from any part of the United States. They shall receive their appointment by invitation of the meeting, after an introduction from any of the members present, or from any of the absent permanent members. They shall hold their connection with the Society until the close of the session at which they were received, and may participate in the discussions without the right of voting.

The Permanent Members shall consist of regular graduates from reputable schools of medicine, who have served in the capacity of delegates, or such other physicians as may be proposed by two members of this Society, reported on favorably by the Committee of Investigation, and receiving a two-thirds vote of all the members present.

A circular will be sent to each member, from the Committee of Arrangements, giving all necessary information relative to the programme and the arrangements made with the different railroads in regard to reduction of fare, etc.

T. DAVIS FITCH, M.D., *Permanent Secretary*,
296 W. Monroe St., Chicago.

BOARD OF HEALTH, OFFICE SANITARY SUP'T, }
CHICAGO, April 7, 1875. }

Dr. W. Hay, *Editor Journal*:

DEAR SIR—I transmit herewith the report for March, also some figures from our annual report, (the fiscal year ending April 1st). You will see that the decrease is 1,532, compared with preceding year, and 2,131, compared with 1872. The decrease from small-pox was 427 deaths, and the decrease in the number of cases was 1,462; compared with 1872, the decrease was 1,939 cases. The prevalent diseases of this climate show a marked decrease. Taking everything into consideration, the death rate for the year has been very low.

Respectfully,

BEN. C. MILLER, *San. Supt.*

The total number of deaths for 1874	8,025
For the preceding year	9,557
Deaths from small-pox	90
Deaths from small-pox preceding year	517
Decrease	427
Compared with 1872, the decrease was	565
The decrease in the number of cases compared with preceding year	1,462
Decrease compared with 1872	1,939
Decrease by—	
Consumption	10
Convulsions	171
Pneumonia	31
Diseases of the brain	231
Diarrhoea	36
Diphtheria	14
By cholera infantum there were more deaths	66
During the month of March the report of Dr. Reid, health officer, shows:—	
Notices served	1,273
Nuisances abated	759
Articles condemned as unfit for food—	
Quarters of Beef	288
Carcasses of mutton	9
Calves	134
Hogs	21
Fresh meat (lbs.)	1,532
Corned beef (lbs.)	3,460
Hams	311
Shoulders	285
Ducks	12
Dead animals removed during the month	906
Suits brought for violating health ordinance	—

Chicago Mortality Report for March, 1875. Reported by Dr.

BEN. C. MILLER, Sanitary Superintendent.

Accident, by fall	3	Aorta, atheroma of	1
“ by drowning	1	Ascites	2
“ by railroad	3	Atelectasis pulmonum	1
Abscesses	1	Bladder, inflammation of	1
Anus, imperforate	1	Bowels, congestion of	2
Apoplexy	7	“ hæmorrhage of	1
Asphyxia	1	Brain, anæmia of	1

Brain, abscess of.....	2	Jaundice.....	2
“ compression of.....	1	Kidneys, disease of.....	1
“ congestion of.....	6	“ Bright’s disease of.....	5
“ disease of.....	1	Liver, cirrhosis of.....	1
“ inflammation of.....	5	“ inflammation of.....	1
“ softening of.....	1	Lungs, congestion of.....	7
Bronchitis.....	14	“ hæmorrhage of.....	1
“ capillary.....	3	Manslaughter.....	2
Cancer of face.....	1	Mania, puerperal.....	1
“ of liver.....	4	Measles.....	18
“ of stomach.....	3	“ typhoid.....	1
“ of uterus.....	1	Meningitis.....	8
Cholera infantum.....	1	“ cerebro-spinal.....	9
Colon, stricture of.....	1	“ tubercular.....	4
Consumption.....	71	Metritis.....	1
Convulsions.....	66	Edema, pulmonum.....	1
Croup.....	6	Old age.....	13
“ membranous.....	1	Paralysis.....	3
Cyanosis.....	2	Pericarditis.....	1
Debility, general.....	4	Peritonitis.....	5
Diarrhœa.....	2	“ puerperal.....	3
“ chronic.....	1	Pneumonia.....	63
Diphtheria.....	9	“ typhoid.....	5
Dropsy, general.....	8	Pleurisy.....	2
Dysentery.....	2	Poisoned.....	3
Embolism.....	1	Pyæmia.....	3
Endo-carditis.....	1	Rheumatism.....	3
Enteritis.....	10	“ inflammatory.....	1
Entero-colitis.....	1	Scrofula.....	1
Exposure.....	1	Suicide, by poison.....	1
Erysipelas.....	4	“ by hanging.....	2
Fever, congestive.....	1	“ by morphine.....	3
“ puerperal.....	8	Septicæmia.....	2
“ remittent.....	1	Small-Pox.....	3
“ scarlet.....	12	Spine, disease of.....	4
“ typhoid.....	10	“ paralysis of.....	1
Gangrene of leg.....	1	Stomach, softening of.....	1
Gastritis.....	3	Syphilis.....	2
Hæmorrhage.....	1	Tabes mesenterica.....	4
Heart, disease of.....	8	Teething.....	5
“ fatty degeneration of.....	4	Tetanus.....	1
“ hypertrophy of.....	1	Trismus.....	2
“ mitral valves, disease of.....	1	Thrush.....	1
“ rheumatism of.....	3	Urine, retention of.....	1
“ paralysis of.....	2	Uræmia.....	1
“ valvular disease of.....	4	Uterus, hæmorrhage of.....	1
Hemiplegia.....	1	Vitality, deficient.....	2
Hepatitis.....	1	Whooping cough.....	4
Hernia, strangulated.....	2	Unknown.....	1
“ congenital.....	1		
Hydrocephalus.....	4	Total.....	549
Inanition.....	9		

Premature births, 7; Still births, 68. Total, 75.

COMPARISON.

Deaths in March, 1875, 549; in February, 1875, 460. Increase, 89. Deaths in March, 1874, 508. Increase, 41.

AGES.

Under one year	163	Thirty years to forty	67
One year to two	49	Forty " " fifty	40
Two years to three	28	Fifty " " sixty	31
Three " " four	22	Sixty " " seventy	30
Four " " five	12	Seventy " " eighty	21
Five " " ten	13	Eighty " " ninety	4
Ten " " twenty	20	Ninety " " one hundred	—
Twenty " " thirty	48	One hundred and upwards	1
		Total	549
White	540	Males	312
Colored	9	Females	237
		Married	193
		Single	356
Total	549	Total	549

NATIVITIES.

Austria	1	England	13	Russia	1
Belgium	1	France	2	Scotland	6
Bohemia	6	Germany	66	Sweden	8
Canada	3	Holland	2	Switzerland	1
Native—Chicago	80	Ireland	61	Unknown	5
Foreign, " "	176	Italy	2		
U. States, other parts	100	Norway	10	Total	549
Denmark	3	Poland	3		

Deaths daily, 17½. Mean thermometer, 31.5°. Rain fall, 1.37 inches.

MORTALITY BY WARDS.

Wards.	No. Deaths.	Pop. in 1874.	Percentage.
1	6	5,725	one death in 954
2	4	4,830	" " 1,207
3	20	14,861	" " 743
4	18	15,361	" " 853
5	30	20,078	" " 669
6	54	35,916	" " 665
7	42	31,722	" " 755
8	45	29,143	" " 648
9	36	31,654	" " 879
10	16	17,385	" " 1,087
11	18	14,022	" " 779
12	21	16,792	" " 799
13	10	17,892	" " 1,789
14	23	16,720	" " 727
15	56	45,545	" " 813
16	25	21,922	" " 877
17	36	20,777	" " 577
18	24	21,392	" " 891
19	5	4,677	" " 935
20	8	8,995	" " 1,124

497 Ratio of deaths to population in 1874, one death in 720½.

No. deaths in Wards	497	Manslaughter	2
Accidents	7	Protestant Orphan Asylum	3
County Hospital	6	Poisoned	3
Foundlings' Home	14	St. Joseph's Hospital	3
Home for Friendless	2	Suicides	6
Hospital Alexian Bros.	1		
Mercy Hospital	5	Total	549

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This Elixir contains Iodine, Pyrophosphate of Iron, the active principles of anti-scorbutic and aromatic plants, and acts as a *tonic, stimulant, emenagogue*, and a *powerful regenerator of the blood*. It is an invaluable remedy for all constitutional disorders due to the impurity and poverty of the blood. One of the advantages of this new preparation consists in combining the virtues of Iodine and Iron without the inky taste of Iodide of Iron.

FOUGERA'S VERMIFUGE. (Compound Dragees of Santonine.)

Santonine, the active principle of *Semen contra*, (European Wormseed,) occupies the first rank among the anthelmintic remedies. In this preparation the Santonine is combined with a purgative agent under the form of a sugar-coated pill, and thus forms a pleasant and efficacious remedy, which has been used for many years. Each dragee contains one half grain of Santonine and one fifth grain of gambogine.

LANCELOT'S CIGARETTES, FOR ASTHMA.

It suffices to *inhale* the smoke of these Cigarettes, to experience immediate relief.

All nervous affections in general, and especially those of the chest, are often cured, and always relieved by the use of Lancelot's Cigarettes.

PENNES' BATHS.

A substitute for sea and mineral baths. *Tonic, Stimulating and Resolvent*. Used by over one hundred physicians in the hospitals of Paris, in Skin Diseases, Nervous Affections, Anemia, Chlorosis, Gout, Rheumatism, Sciatica, also in many complaints where a general external medication is desirable. Sold in rolls, one or more of which may be used in a bath.

INJECTION BROU.

This injection, approved by several academies of medicine, is well known for its sure and prompt action. It is used without any internal remedy, and is found effectual in curing cases, which resist all ordinary modes of medication.

E. FOUGERA & CO., New York.

FLUID EXTRACT

EUCALYPTUS.

Prepared from the Leaves of the *Eucalyptus Globulus*.

By PARKE, DAVIS & CO., MANUFACTURING CHEMISTS, DETROIT.

We are now prepared to furnish the profession with a full supply of a reliable fluid extract of this valuable remedy.

"The *Eucalyptus globulus* belongs to the Natural Order *Myrtaceae*, which furnishes the clove (*Caryophyllus aromaticus*), oil of cajeput (*Melaleuca minor*), and the pimento (*Eugenia Pimenta*). It is one of the noblest representatives of a genus that contains upwards of a hundred species. It is often gigantic in size, and is impregnated throughout with an aromatic substance, which is present, however, in smaller proportions in the wood and the bark than in the flowers and the leaves. The tree is easily acclimatized in the southern provinces of France, Corsica, Algiers and Spain, being known in the last named country under the popular name of the fever tree."

PROPERTIES.—Moderate doses cause a disturbance of the digestion, sometimes succeeded by a diarrhoea in which the motions, like the eructations, recall the smell of the eucalyptus. Large doses sometimes cause headache, excitement and fever, with accelerated respiration, thirst, sickness and generally sleepiness; upon anæmic persons, however, it acts as a narcotic. The symptoms rarely last more than a few hours.

"In Australia the *Eucalyptus globulus* is the popular remedy for fevers, and in Europe it has been used successfully in the treatment of diseases prevalent in marshy districts. M. Gubler quotes the testimony of several medical practitioners, who say that it produces marvellous results in cases of intermittent fevers, especially obstinate ones where sulphate of quinine has been used without effect." — *Phar. Jour. and Trans.*, March 2, 1872.

It has been recommended for, and used with marked success as a disinfectant in dressing wounds, ulcers, purulent catarrhal affections of the urethra and vagina, fetid breath, and as an astringent to harden spongy and bleeding gums.

THERAPEUTICAL APPLICATIONS OF EUCALYPTUS GLOBULUS.—At the last meeting of the San Francisco Medical Society, Dr. Pignedupuytren said he had used the eucalyptus in the French Hospital for a year, during which time many interesting results had been noted. In March last, a hundred of the small trees had been planted on the Hospital grounds. They had now reached the height of seven feet. He related the following cases:

"A man had arteritis of the leg, succeeded by gangrene, which extended so high up as to render amputation impossible. In two weeks a large ulcer resulted, whose odor was horribly fetid. Everything in turn was employed to destroy this odor, to no effect. At last a decoction of eucalyptus was resorted to, and, without exaggeration, in five minutes all fetor had disappeared. The decoction continued to be used with the same effect until death occurred, two or three weeks subsequently.

"Another man, who had been under treatment in the Hospital for two months, with extensive, deep ulcer from varix, of a year's duration, had the decoction applied to the ulcer three times a day, with remarkable effect. In five or six days the ulcer was entirely covered with healthy granulations, and in a month it was entirely well.

"A woman had been troubled for many months with an ulcer around the orifice of the urethra. It was cauterized five times with no result. After twelve days' use of the decoction of eucalyptus, washing thrice daily, it was well.

"Four cases of syphilitic chancres healed under the eucalyptus dressing in five or six days, without other treatment. These were very recent cases, or constitutional treatment would have been resorted to.

"He had but one case of intermittent fever to report. This had proved rebellious to quinia, and also to arsenic, which latter had been administered for two weeks. A three weeks' course of the eucalyptus cured entirely.

"So numerous were the cases of bronchitis cured with the drug, that it was hardly worth while to mention them." — *Pacific Medical Journal*.

EUCALYPTUS GLOBULUS.—Dr. Wooster, M. D., of San Francisco, California, submits a report of 135 cases of various diseases treated exclusively with fluid extract of eucalyptus globulus. This preparation was made by Dr. Coleman, Resident Physician at the United States Marine Hospital.

Remittent fever: cases treated, 5; cured, 5. Intermittent fever: cases treated, 10; cured, 10. Typhoid fever: cases treated, 9; cured, 9. Nephritis: cases treated, 4; cured, 3; improved, 1. Diuresis: cases treated, 10; cured, 7; improved, 3. Incontinence of urine: cases treated, 3; cured, 3. Vesical catarrh: cases treated, 27; cured, 25; improved, 2. Haemorrhagia: cases treated, 13; cured, 10; improved, 3. Valvular disease of heart: cases treated, 7; cured, 0; improved, 7. Dysentery: cases treated, 4; cured, 3; improved, 1. Chronic diarrhoea: cases treated, 13; cured, 9; improved, 4. Gonorrhoea (syphilitic): cases treated, 15; cured, 10; improved, 5. Dropsy: cases treated, 6; cured, 3; improved, 3. Of the whole number of cases, 105 were cured and 30 improved.

At a recent meeting of the San Francisco Medical Society, Dr. Stout exhibited an ingeniously constructed apparatus for the inhalation of medicated vapors. The medicated liquid is kept boiling by a spirit-lamp and the vapor conducted through a tube. He had used the eucalyptus in this way, employing the tincture in water. It was preferable to the common atomizer, because of the warm vapor, which is not only medicinal in itself, but promotive of absorption. The eucalyptus he had found very beneficial in bronchial and pulmonary affections.

Dr. Pignedupuytren testified to the virtues of the remedy, which had been fully tested by himself and Dr. D. Oliveira, in the French Hospital. It had been found highly serviceable in affections of the larynx and of mucous membrane in general; also as a tonic. In France it was much used as a febrifuge, and by some considered a substitute for cinchona. The leaves growing near the trunk of the tree were the most aromatic. A large number of the trees had been planted around the French Hospital, for sanitary and medicinal purposes. The leaves, in drying, emitted a large amount of balsamic exhalations, capable of causing headache in persons much exposed to them, as he had experienced in his own house. — *Pacific Medical and Surgical Journal*.

We prepare the following FLUID EXTRACTS directly from the GREEN ROOTS, and can recommend them to the profession as sure and uniform remedies:

FLUID EXTRACT GELSEMINUM.

FLUID EXTRACT VERATRUM VIRIDE.

FLUID EXTRACT COTTON ROOT BARK.

PEPSINE.

Under this head we offer three preparations, made by us directly from the stomach of the hog, whose habits and food render its pepsine peculiarly adapted to supply the needs of a weak digestive power in the man. Great care has been taken to issue uniform articles, which can be relied upon to produce their specific effects therapeutically.

DRY PEPSINE.

Prepared with sugar of milk to a fine powder, and assayed that five grains will digest, in an acidulated solution, sixty grains of coagulated albumen, in from four to six hours, which correspond to the digestive power of half an ounce of human gastric juice.

LIQUID PEPSINE.

Prepared with glycerine, for cases where it is necessary to prescribe in solution, or with the addition of other agents.

ESS. PEPSINE.

An agreeable solution of pepsine, where it is advisable to secure elegance in administration.

We desire to call the attention of physicians to our line of SOLUBLE SUGAR COATED PILLS, which is very complete, supplying every officinal or other reliable formula for pills, in an elegant form for administration. All materials are the purest attainable, and the pills themselves divided with great care by hand to ensure accuracy.

Having succeeded after a long experience and experiment, in manufacturing perfectly soluble pills, we would be pleased to have physicians test them on this point.

We add a few formulas of pepsine combinations from our list, some of which are new.

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PIL PEPSINE AND BISMUTH, 2 1-2 grs.

Pepsine 1 1-2 grs.

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PIL PEPSINE AND IODIDE IRON, 3 grs.

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WARNER & CO.'S PHOSPHORUS PILLS.

Per Hundred.

PIL: PHOSPHORUS COMP., each containing Phosphorus, gr. $\frac{1}{100}$;
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Carb. Val., gr. 1; Ext. Nux Vomica, gr. $\frac{1}{4}$, **Price, \$2.00**

Also, PIL: PHOSPHORUS, gr. $\frac{1}{80}$, and PIL: PHOSPHORUS, gr. $\frac{1}{100}$, **Price, \$1.00**

Phosphorus is an important constituent of the animal economy, particularly of the brain and nervous system, and is regarded as a valuable remedy for the following diseases, such as,

LAPSE OF MEMORY, SOFTENING OF THE BRAIN, LOSS OF NERVE POWER, PHTHISIS, PARALYSIS, IMPO-TENCY, CONSUMPTION AND NEURALGIA.

The pilular form has been deemed the most desirable for the administration of Phosphorus. It is in a perfect state of subdivision, as it is incorporated with the material while in solution, and is not extinguished by oxidation.

This method of preparing Phosphorus has been discovered and brought to perfection by us, and is thus presented in its elementary state, free from repulsive qualities, which have so long militated against the use of this potent and valuable remedy. This is a matter requiring the notice of the physician, and under all circumstances the administration of Phosphorus should be guarded with the greatest care.

Phosphorus as a Remedy for Neuralgia.

The following table is taken from a valuable paper, contributed to the "*London Practitioner*" by Prof. J. Ashburton Thompson, on the use of Phosphorus for the above-named complaint, large doses being employed by him, (the 1-25 gr. or more) and with marvelous success. He records 18 cases, as will be seen by table below, and arranges them in three classes—Acute Primary Attacks, Acute Recurrent Attacks and Chronic cases. Six cases occur in each class. In the first class the ages ranged between 25 and 46; in the second between 30 and 40; in the third between 24 and 40.

Some of the patients suffered from Trigeminal, some from Cervico Occipital, some from Cervico Brachial Neuralgia, and one in the second class from Sciatica. All the cases in the first two classes were cured; of the third class three were cured, one of the patients having been afflicted 16 years, without a week's freedom from pain.

Sex.	Age.	Nerves Affected.	Duration of Attack.	Extreme Duration of Treatment.	Complication.	Result.
PRIMARY ACUTE CASES.						
M	40	R. Trigeminal.	4 days.	4 days.	Catarrh.	Recovery.
F	26	L. Trigeminal.	14 days.	10 days.	Anaemia.	"
F	25	"	21 days.	24 hours.	None.	"
M	46	Cervico Occipital.	12 hours.	12 hours.	General Derangement.	"
F	28	L. Trigeminal.	14 days.	48 hours.	Lactation.	"
F	26	"	6 days.	12 days.	Catarrh.	"
RECURRENT ACUTE CASES.						
F	60	R. Sciatic.	15 days.	36 hours.	Decay of Nature.	Recovery.
F	33	L. Trigeminal.	6 days.	6 days.	None.	"
F	32	"	21 days.	24 hours.	"	"
F	35	R. Trigeminal.	10 days.	4 days.	Lactation.	"
F	30	"	14 days.	5 days.	Phthisis.	"
F	30	"	7 days.	48 hours.	Debility.	"
CHRONIC CASES.						
F	28	{ R. & L. Trigeminal. Cervico Brachial. }	18 months.	5 weeks.	Phthisis.	Relief.
F	24	{ R. & L. Trigeminal. Occipital, R. & L. }	4 weeks.	9 days.	"	"
M	35	{ Trigeminal. Cervico Brachial. }	12 months.	12 days.	Nervous Debility.	Cure.
F	36	{ R. & L. Trigeminal. R. Trigeminal. }	2 months.	14 days.	Pregnancy.	"
F	26	"	16 years.	18 days.	None.	"
F	40	R. Trigeminal.	4 months.	13 days.	" (Decayed Teeth.)	None.

PHOSPHORUS AS A NERVE TONIC.

Its use is supported by no less authority than Prof. Delpech, Prof. Fisher, of Berlin, Dr. Eames, (in the *Dublin Journal*.) Dr. Burgess, and Dr. Hammond, of New York. The special treatment indicated in these cases is: 1st. Complete rest of mind, especially abstention from all occupations resembling that upon which the mind has been overworked; 2d. The encouragement of any new hobby or study not in itself painful, which the patient might select; 3d. Tranquillity to the senses, which expressly give in these cases incorrect impressions, putting only those objects before them calculated to soothe the mind; 4th. A very nourishing diet, especially of shell fish; 5th. The internal administration of phosphorus in pilular form, prepared by WM. R. WARNER & Co.

PILLS SENT BY MAIL ON RECEIPT OF LIST PRICE.

WM. R. WARNER & CO., Philadelphia.,
MANUFACTURERS OF
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PRICE.

			Per 100	Per 500
PIL ANALEPTIC. (Warner & Co.)				
R	<i>Pr. Antimonialis,</i>	<i>gr. LXXV.</i>		
	<i>" Res. Guaiaci,</i>	<i>gr. C.</i>		
	<i>" Aloes Soc.,</i>	<i>gr. LXXV.</i>	.50	2.75
	<i>" Myrrhæ,</i>	<i>gr. L.</i>		
<i>M-fiat pilulæ, No. C.</i>		<i>Dose 1-4 Pills.</i>		
PIL ANODYNE. (Warner & Co.)				
R	<i>Pr. Camphoræ,</i>	<i>gr. C.</i>		
	<i>Morphia Acetat,</i>	<i>gr. V.</i>		
	<i>Ext. Hyoscyami,</i>	<i>gr. C.</i>	.75	3.50
	<i>Ol. Res. Capsici,</i>	<i>gtt. V.</i>		
<i>M-fiat pilulæ, No. C.</i>		<i>Dose 1-2.</i>		
PIL ANTICHLOROTIC. (Warner & Co.)				
R	<i>Potass. Chlor.,</i>	<i>gr. C.</i>		
	<i>Ferr. Chlor.,</i>	<i>gr. L.</i>		
	<i>Pr. Podophylli,</i>	<i>gr. C.</i>	.75	3.50
	<i>Pr. Myrrhæ,</i>	<i>gr. L.</i>		
<i>M-fiat pilulæ, No. C.</i>		<i>Dose 1-2.</i>		
PIL ANTICHOROMANIA. (Warner & Co.)				
R	<i>Zinci Valer.</i>	<i>gr. CC.</i>		
	<i>Ferr. "</i>	<i>gr. XXV.</i>		
	<i>Ext. Sumbul,</i>	<i>gr. L.</i>	.75	3.50
<i>M-fiat pilulæ, No. C.</i>		<i>Dose 1-2.</i>		
PIL ANTISPASMODIC. (Warner & Co.)				
R	<i>Ext. Hyoscyami,</i>	<i>gr. L.</i>		
	<i>Morphia Acetat,</i>	<i>gr. X.</i>		
	<i>Brom. Camphor,</i>	<i>gr. L.</i>	.75	3.50
	<i>Pr. Capsici,</i>	<i>gr. L.</i>		
<i>M-fiat pilulæ, No. C.</i>		<i>Dose 1-2.</i>		

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Warner & Co.'s Sugar-Coated Pills.

PRICE.

Per 100	Per 500
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PIL ANTIPERIODIC.

(Warner & Co.)

R	<i>Cinchonidiae Sulph.</i>	gr. C.		
	<i>Fos. Fodophylli.</i>	gr. V.		
	<i>Strychnia Sul.</i>	gr. III.		
	<i>Colsemin.</i>	gr. V.	.50	2.75
	<i>Feni Sulph. Exs.</i>	gr. L.		
	<i>Ol. Fos. Capsici.</i>	glt. X.		
	<i>M-fi at pilulac. No. C.</i>	<i>Dose 4-5.</i>		

PIL ANTISPLENETIC.

(Warner & Co.)

R	<i>Fu. Aloes Inc.</i>	gr. C.		
	<i>" Ammoniac.</i>			
	<i>" Myrrhae, aa</i>	gr. L.	.50	2.75
	<i>Ext. Bryony.</i>	gr. C.		
	<i>M-fi at pilulac. No. C.</i>	<i>Dose 2-4.</i>		

PIL ASTRINGENT.

(Warner & Co.)

R	<i>Ext. Geranii.</i>	gr. CC.		
	<i>Fu. Opii.</i>	gr. XXV.		
	<i>Ol. Menth. Pip.</i>		.50	2.75
	<i>Ol. Fos. Zingiber, aa</i>	glt. V.		
	<i>M-fi at pilulac. No. C.</i>	<i>Dose 1-2.</i>		

PIL CATHARTIC. (Cholagogue.) (Warner & Co.)

R	<i>Fos. Fodophylli.</i>	gr. L.		
	<i>Fil. Hydrarg.</i>	gr. XXV.		
	<i>Ext. Hyoscyami.</i>	gr. XII.		
	<i>" Nuc. Vom.</i>	gr. VI.	.50	2.75
	<i>Ol. Fos. Capsici.</i>	glt. XII.		
	<i>M-fi at pilulac. No. C.</i>	<i>Dose 1-2.</i>		

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PRICE.

Per 100 Per 500

PIL ECCOPROTIC.

(Warner & Co.)

R	Ext. Aloes Soc.,	gr. CC.		
	" Nuc. Vomica,	gr. XX.		
	Fes. Podophylli,	gr. XXX.	.60	2.75
	Ol. Caryophyl,	gtt. X.		
	M ^o -fiat pilulæ, No. C.	Dose 2-4.		

PIL LAXATIVE.

(Warner & Co.)

R	Fr. Aloes Soc.,	gr. C.		
	Sulphur,	gr. XX.		
	Fes. Podophylli,	gr. XX.	.60	2.75
	Fes. Suiacis,	gr. L.		
	Lys. Chamni,	Q.S.		
	M ^o -fiat pilulæ, No. C.	Dose 1-2.		

PIL SEDATIVE.

(Warner & Co.)

R	Ext. Sumbul,			
	" Valerianæ,			
	" Hyoscyami, aa	gr. L.	.75	3.50
	" Cannab. Ind.,	gr. X.		
	M ^o -fiat pilulæ, No. C.	Dose 1-2.		

PIL TONIC.

(Warner & Co.)

R	Ext. Gentianæ,	gr. C.		
	" Humuli,	gr. L.		
	Feni Carb. Sacch.,	gr. XXV.		
	Ext. Nuc. Vomica,	gr. V.	.60	2.75
	Fes. Podophylli,	gr. IV.		
	Ol. Fes. Zingiber,	gtt. X.		
	M ^o -fiat pilulæ No. C.	Dose 1-2.		

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PURE COD-LIVER OIL.

Manufactured on the Sea-Shore by HAZARD & CASWELL, from
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The universal demand for an article of Cod-Liver Oil that could be depended upon as a *strictly pure and scientifically prepared*, having been long felt by the Medical Profession, were they induced to undertake its manufacture at the *Fishing Stations*, where the fish are brought to land every few hours, and the livers consequently are in great perfection.

This Oil is manufactured *by us* on the sea-shore, with the greatest care, from fresh healthy livers of the Cod only, without the aid of any chemicals, by the simplest possible process and lowest temperature by which the Oil can be separated from the cells of the livers. It is nearly devoid of color, odor and flavor—having a bland, fish-like, and, to most persons, not unpleasant taste. It is so sweet and pure that it can be retained by the stomach when other kinds fail, and patients soon become fond of it.

The secret of making good Cod-Liver Oil lies in the proper application of the proper degree of heat; too much or too little will seriously injure the quality. Great attention to cleanliness is absolutely necessary to produce sweet Cod-Liver Oil. The rancid Oil generally found in market is the product of manufacturers who are careless about these matters.

Prof. Parker, of New York, says: "I have tried almost every other manufacturer's oil, and give yours the decided preference."

Prof. Hayes, State Assayer of Mass., after a full analysis of it, says: "It is the best for foreign or domestic use."

After years of experimenting, the Medical Profession of Europe and America, who have studied the effects of different Cod-Liver Oils, have unanimously decided the light straw-colored Cod-Liver Oil to be far superior to any of the brown Oils.

The Three Best Tonics of the Pharmacopœia: IRON—PHOSPHORUS—CALISAYA.

CASWELL, HAZARD & CO., also call the attention of the Profession to their preparation of the above estimable Tonics, as combined in their elegant and palatable **Ferro-Phosphorated Elixir of Calisaya Bark**, a combination of the Pyrophosphate of Iron and Calisaya never before attained, in which the nauseous inkiness of the Iron and astringency of the Calisaya are overcome, without any injury to their active tonic principles, and blended into a beautiful amber-colored Cordial, delicious to the taste, and acceptable to the most delicate stomach. This preparation is made directly from the **ROYAL CALISAYA BARK**, not from **ITS ALKALIDS OR THEIR SALTS**—being unlike other preparations called "Elixir of Calisaya and Iron," which are simply an **Elixir of Quinine and Iron**. Our Elixir can be depended upon as being a true Elixir of Calisaya Bark with Iron. Each dessertspoonful contains seven and a half grains Royal Calisaya Bark, and two grains Pyrophosphate of Iron.

Ferro-Phosphorated Elixir of Calisaya Bark with Strychnia. This preparation contains one grain of Strychnia added to each pint of our Ferro-Phosphorated Elixir of Calisaya Bark, greatly intensifying its tonic effect.

Ferro-Phosphorated Elixir of Calisaya with Bismuth, containing eight grains Ammonio-Citrate of Bismuth in each tablespoonful of the Ferro-Phosphorated Elixir of Calisaya Bark.

Elixir Phosphate Iron, Quinine and Strychnia. Each teaspoonful contains one grain Phosphate Iron, one grain Phosphate Quinine, and one sixty-fourth of a grain of Strychnia.

Ferro-Phosphorated Elixir of Gentian, containing one ounce of Gentian, and one hundred and twenty-eight grains Pyrophosphate Iron to the pint, making in each dessertspoonful seven and one-half grains Gentian and two grains Pyrophosphate Iron.

Elixir Valerianate of Ammonia. Each teaspoonful contains two grains Valerianate Ammonia.

Elixir Valerianate of Ammonia and Quinine. Each teaspoonful contains two grains Valerianate Ammonia and one grain Quinine.

Ferro-Phosphorated Wine of Wild Cherry Bark. Each fluid-drachm contains twenty-five grains of the Bark, and two grains of Ferri-Pyrophosphate.

Wine of Pepsin. This article is prepared by us from fresh Rennets and pure Sherry Wine.

Elixir Taraxacum Comp. Each dessertspoonful contains fifteen grains of Taraxacum. **Elixir Pepsin, Bismuth and strychnine**. Each fluid-drachm contains one sixty-fourth of a grain of Strychnine.

Juniper Tar Soap. Highly recommended by the celebrated Erasmus Wilson, and has been found very serviceable in chronic eczema and diseases of the skin generally. It is invaluable for chapped hands and roughness of the skin caused by change of temperature. It is manufactured by ourselves, from the purest materials, and is extensively and successfully prescribed by the most eminent Physicians.

Iodo-Ferrated Cod-Liver Oil. This combination holds sixteen grains Iodide of Iron to the ounce of our pure Cod-Liver Oil.

Cod-Liver Oil, with Iodine, Phosphorus and Bromine. This combination represents Phosphorus, Bromine, Iodine and Cod-Liver Oil, in a state of permanent combination, containing in each pint: Iodine, eight grains; Bromine, one grain; Phosphorus, one grain; Cod-Liver Oil, one pint.

Cod-Liver Oil, with Phosphate of Lime. This is an agreeable emulsion, holding three grains Phosphate of Lime in each tablespoonful.

Cod-Liver Oil, with Lacto-Phosphate of Lime.

CASWELL, HAZARD & CO.,

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We call special attention to the following articles lately added to our list:

Fluid Extract Guarana.
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Fluid Extract Bearsfoot, (from the fresh root.)
Fluid Extract Calendula.
Fluid Extract Chestnut Leaves.
Fluid Extract Conium Seed.
Fluid Extract Cotton Root Bark, (from the fresh root.)
Fluid Extract Gelseminum, (from the fresh root.)
Fluid Extract Stavesacre Seed.
Pills of Picrate Ammonium. (Sugar Coated.)
Brundage's Anti-Constipation Pills. (Sugar Coated.)

Send for dose, descriptive list and circulars, which will be forwarded on application.

Physicians who desire our preparations will please specify P., D. & Co. on their prescriptions.

Our list of manufactures can be obtained of the following Wholesale Druggists, at manufacturer's rates:

R. Macready & Co.,	Cincinnati, O.
Kenyon, Potter & Co.,	Syracuse, N. Y.
Geo. A. Kelly & Co.,	Pittsburg, Pa.
Benton, Myers & Canfield,	Cleveland, O.
Geo. M. Dixon,	Dayton, O.
A. Peter & Co.,	Louisville, Ky.
E. Burnham, Son & Co.,	Chicago, Ill.
A. A. Mellier,	St. Louis, Mo.
Colburn, Birk & Co.,	Peoria, Ill.
Geo. A. Eddy,	Leavenworth, Kan.
Godbe & Co.,	Salt Lake City, Utah.
Plain, Williams & Co.,	Toledo, O.
Shrewsbury Bros.,	Parkersburg, W. Va.
Farrand, Williams & Co.,	Detroit, Mich.
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